PHILOSOPHICAL

TRANSACTIONS.

I. *Account of experiments made with an invariable pendulum at the Royal Observatory at Greenwich, and at Port Bowen, on the eastern side of Prince Regent's Inlet. By Lieutenant* HENRY FOSTER, *R. N. F. R. S.*

Read April 6, 1826.

THE determination of the length of the seconds' pendulum in different latitudes, is a subject, that has long been considered of much interest and importance, but more especially of late years, since the practical problem has received from the ingenuity of Captain HENRY KATER, certain improvements and simplifications, which have rendered its results more accurate than had ever before been obtained.

With the nature of these improvements I had already become acquainted when in H. M. S. Conway, with Captain BASIL HALL, on the South American station, where, as will be seen in the Philosophical Transactions for 1823, several series of experiments were made by that officer and myself. Soon after my appointment to the N. W. Expedition under the command of Captain W. E. PARRY, the Board of Longitude, at the suggestion of Captain KATER, did me the honour

to entrust me with an invariable pendulum; and the details of the observations made with this instrument, together with a statement of all the attendant circumstances, are given in the following pages.

The first set of experiments, which are marked (No. I.), were made at the Royal Observatory at Greenwich, in an apartment to the S. W. of the Transit Room, originally intended, I believe, for the observations of the eclipses of Jupiter's satellites, but upon this occasion kindly appropriated by Mr. POND to my use. This room has a solid stone floor, on which the triangular supports for the pendulum and clock were placed. The roof is low, and being composed of wooden panels, the temperature of the room was materially affected by the state of the weather; on one occasion the thermometer ranged four degrees during the observations, although the light was admitted by a window on the north side.

In the adjustments of the instruments employed in the experiments, I strictly adhered to the mode described by Captain KATER, in his paper read before the Royal Society in June, 1819. The intervals between the coincidences were determined by the disappearance of the white disk on the pendulum of the clock behind the tail-piece of the pendulum, and also by the mean of its disappearance and re-appearance. I was induced to take this additional trouble, in order to remove all possible objections which might be raised as to the accuracy of the result; and partly that I might, by actual trials, furnish materials for putting at rest the controversy on this subject. The method of disappearances has been followed by Captain KATER, and more lately by Captain BASIL

HALL and General Sir THOMAS BRISBANE; that of taking a mean between the disappearance and re-appearance of the disk, has been practised by Mr. GOLDINGHAM at Madras, and by Captain SABINE. Theoretically, the mean of the disappearance and re-appearance, would give the true moment at which the two pendulums coincided at the lowest part of the arc of vibration, were it the object of this problem to determine that moment: but it is not:—the experiment being strictly comparative;—and the method of disappearances accomplishes all that is sought after, with perfect certainty, and with less than half the trouble. It may, however, be useful to know, that both methods give identically the same results; that is to say, the number of vibrations of a pendulum determined by the method of disappearance at one station, compared with the number deduced by the same method at another, give precisely the *same* acceleration or retardation as that which would result from comparing the number of vibrations at the first station, ascertained by taking the mean of disappearance and re-appearance, with those of the second station, ascertained by the *same* method. The results of the experiment contained in the following paper show this very obviously, as follows:

Vibrations by the method of disappearance alone at		Vibrations by the method of mean of disappearance and re-appearance at	
Greenwich, ...	86159,368	Greenwich, ...	86159,500
Port Bowen, ...	86230,172	Port Bowen, ...	86230,313
Acceleration by the method of disappearance . .	= 70,804	Acceleration by the mean of disappearance and re-appearance . . .	= 70,813

The difference of the results amounts only to 9 ten-thousandths of a vibration in 24 hours.

This, it may be observed, is the end and object of the problem; which, as I have before stated, is strictly a comparative one; and the only thing to be insisted upon is, that the *same* method should be followed, and the *same* adjustments of the apparatus strictly adhered to, at all the stations which are to be compared together.

Supposing, however, that the vibrations recorded in the present experiments, ascertained by the one method, were compared with those determined by the other, the results would differ only 0,14 of a vibration in 24 hours; a quantity which does not occasion a difference of two ten-thousandths of an inch in the length of the deduced seconds' pendulum, nor of an unit in the denominator of the fraction expressing the ellipticity.

There are cases, of course, dependant on the relative diameter of the white disk, to that of the tail-piece of the pendulum, in which a greater or less difference than the above would exist between the two methods so compared; but this is of no importance whatever, as the object of the problem is fully accomplished by adhering to the *same* method, whichever it be, at both stations, as before stated. It may not be useless to mention also, that Captain KATER did not adopt the method of disappearances in his comparative experiments, until after innumerable trials of other plans, including that of taking the mean of disappearance and re-appearance of the white disk; all of which he eventually abandoned for that of disappearances alone; and it is certainly to be regretted, that he did not publish an account of these unsuc-

cessful trials, as it might have saved myself and others, much unnecessary labour.

The clock used in these experiments was fitted with a gridiron pendulum, vibrating on knife edges in portions of hollow cylinders of agate, and belonged to the Royal Society. It was put in motion at Greenwich on the 17th of April, 1824, three days previous to the commencement of the experiment, and its rate ascertained by comparisons with the transit clock of the observatory each day at noon, and also during the series, at the commencement and at the conclusion. In these essential observations, I was kindly assisted by Mr. T. TAYLOR, jun. of the Royal Observatory.

In making the observation of the coincidences, the following mode was pursued.

The pendulum being placed in the Y's, was gently lowered until the knife edges rested on the agate planes; and the sides of the diaphragm placed in the focus of the eye-piece of the small telescope, were made just to coincide with, or embrace those of the tail-piece of the pendulum; and this adjustment was examined previous to every observation. The heights of the barometer, and of the thermometer suspended with its bulb about $\frac{2}{3}$ of the length of the pendulum below its point of suspension, and about $\frac{3}{4}$ of an inch in front of the middle of the bar, were taken and registered at the beginning and end of each set of observations. The pendulum was set in motion, by drawing it gently on one side with a piece of twine fastened to one of the legs of its support, until the point at the end of the tail-piece, was about $1^{\circ},2$ upon the arc; and a little before the pendulum of the clock attained its highest ascent on that side, the twine was let go, and the pendulum allowed to vibrate freely.

The number of vibrations made by the pendulum in 24 hours reduced to the level of the sea, in vacuo and at a determinate temperature, were computed by the methods detailed in Captain KATER'S paper before referred to.

The second experiment marked (No. II.) was made at Port Bowen, on the eastern side of Prince Regent's Inlet, where the ships passed the winter of 1824–25.

The observatory house, prepared in frame at Deptford, having double walls and roofs, three inches apart, was erected early in October on the north side of the harbour, upwards of a hundred feet above the level of the sea, on a bed of secondary limestone, of which this place is composed; the upper stratum consisted of small loose stones, that could only be removed to the depth of a few inches, below which, it was frozen so hard, that little impression could be made by the action of crows and pickaxes.

The high table land, which characterises this coast, rises directly from the sea, on the south side of the harbour, to the height of between six and seven hundred feet; the upper part, presents a perpendicular cliff of one or two hundred feet, exhibiting alternate black and white horizontal stratifications of secondary limestone; it is also deeply excavated in a variety of places by the action of the weather on its less durable parts, thus giving to its outline the appearance of ruined towers and other ancient edifices. The debris, which has fallen from the upper part of the rock, has formed a steep shelving bank or "talus" along its base, except at those places where its outline is intersected by ravines, and here, projecting points are formed of the materials brought down by the melting of the winter's snow.

To the eastward, at the head of Port Bowen, there is an

extensive water course, and a low flat beach extending a quarter of a mile, and interrupting the high table land for the whole of that space. The land on the north side of the harbour from the head of the Port to Stoney Island (which lies about $\frac{1}{3}$ of a mile to the S. E. of the observatory), is similar in character to that already described on the south. From Stoney Island to the north point of entrance, the coast land is not above 200 feet high, but rises to the height of 900 feet at a little distance in the interior.

The house was placed with its length at right angles to the meridian, and divided into two apartments; one was 10 feet square; the other was five feet wide, 10 feet long, and 10 feet high. For conducting the various observations in the winter, the former of these was lined with a thick woollen cloth called *fearnought;* the floor boarded, and a stove placed in it; the latter, being for the use of the transit instrument, had a slit 18 inches wide cut through the walls and roof, and a large stone placed on the top of a cask filled with sand, formed the pedestal for the instrument.

Previous to the commencement of the experiments with the pendulum, it became necessary to remove the boarded floor, and block up the door opening into the room from the outside: the entrance now being through the slit into the transit room; the door in the middle of the partition between the rooms was protected by screens of canvas and *fearnought* on each side. The surface of the ground was then cleared away to as great a depth as possible, and large flat stones filled in with sand, formed the foundation for the supports of the pendulum and clock: care was also taken, that each support should stand on separate and unconnected stones;

additional solidity was given to the supports, by attaching to the hindmost leg of each, a mass of lead, weighing from 40 to 50 lbs. The clock was now fixed to its support; but the pendulum of experiment remained on board the Hecla, until all the necessary preparations were completed. The small telescope containing the diaphragm, and used to observe the coincidences, was placed at the proper distance ($9\frac{3}{4}$ feet) from the pendulum, on its stand outside of the room, in a porch originally erected for the use of the repeating circle: this stand was sunk so far into the ground, as to bring the object-end of the telescope, on a level with the bob of the pendulum of the clock. An aperture of a foot square was found sufficiently large for observing the coincidences, as well as the face of the clock, when sitting at the telescope, which was sheltered by a screen of canvas from any rush of air into the room, on opening the door of the porch.

A transit instrument made by DOLLOND, of thirty inches focal length, and two inches aperture, was cemented to the pedestal already described, with plaister of Paris, at the latter end of October, and brought accurately into the meridian by the transits of high and low stars. A mark was then set up at the distance of 506 feet, to which it was afterwards always adjusted before making an observation: towards the end of March, the sun's rays caused such an apparent wavering of the meridian mark, as to render its removal necessary, and it was accordingly transferred from the exposed situation where it stood at first, to the opposite side of the harbour, a distance of 6697 feet, where, being fixed in a hollow part of the rock, and completely shaded from the sun, it ever afterwards afforded the means of adjusting the

instrument in a satisfactory manner, being perfectly steady and distinct.

The allowance made for expansion, not being the result of experiments actually made on this particular pendulum, but from the deductions resulting from Captain KATER's experiments on a bar exactly similar, it became important in order to render the experiment strictly comparable with that at Greenwich, to keep the temperature of the room as near as possible to the one in which the previous experiments had been performed in England, namely, 50°. From the smallness of the room it was soon found, that the stove placed within it, produced incessant fluctuations in the temperature; it was therefore removed outside, to about six feet from the north wall of the house, and sunk into the ground level with the foundation of the observatory; built round with stones, and a tent was pitched over it. The room was now warmed by the smoke-pipe passing through it; and, to preserve the temperature of the pendulum more uniform, a large triangular covering of *fearnought* lined with racoon skins, was made to enclose the whole apparatus, except that part of the front required for observation. These arrangements effected the object so far, that the temperature of the room was seldom more than 3°, and frequently not one from 50° during the observations. By a SIXES' self-registering thermometer, the mean range of temperature to which the pendulum was exposed in 24 hours was only 8°, and the extreme not more than 12° during the series in June, whilst that of the atmosphere, varied from 23° to 47° of FAH. without any uniformity.

Under these circumstances the pendulum of experiment was placed in the Y's on the 29th of May, 1825, and the

adjustments finally completed on the 1st of June; the clock put in motion, and the apparatus for measuring the arc of vibration fixed in its place; the barometer and thermometer were also suspended after the manner described in the experiments at Greenwich.

The perfect stability of the point of suspension being of the utmost consequence, spirit levels were arranged on the top of the pendulum frame and clock case, to indicate any giving way in the foundation of their respective supports from the effects of thaw, which at this time very generally prevailed; the foundations however remained solid, and the adjustments were preserved, during the whole course of these experiments, which were not commenced to any good purpose before the 14th of June, owing to an unfavourable change in the weather. This took place on the 7th of June, and was such, as rarely to permit a sight of the sun, and not one glimpse of the stars during the above interval from the 7th to 14th.

In ascertaining the rate of the clock, I was confined to the transits of the sun at noon; of Arcturus and α Lyræ when passing south of the zenith. The sun's transit at midnight could not be taken, in consequence of the undulations of his limb, caused by being too near the top of the high land in that direction; neither could α Lyræ be seen soon after noon, from the general hazy state of the atmosphere at the elevation of 22 degrees. At the time of the sun's transit his rays were prevented from touching any part of the instrument, by a screen of canvas placed between the object-glass of the telescope and the slit in the roof of the house; it had a small hole, through which the observation was made, but being

always covered except at the moment of noon, I had reason to believe that none of the adjustments were ever disturbed. In observing the times of transit, a steady going chronometer made by HENRY FRODSHAM was used, and was found particularly convenient from its beating half seconds. A comparison between the clock and chronometer, was always taken before and after the passage of either sun or star. The time of transits shown by the face of the clock, was then deduced by direct proportion. All the comparisons are given in a separate table.

It occasionally happened, owing to the state of the weather, that one of the stars was partially obscured at the time of its passing the meridian, so as to limit the observation to one or two wires only, whilst the transit of the other, over the whole five was obtained; in such cases the mean of the rates for the clock has been deduced, by giving a value to each, in the ratio of the number of wires observed.

In the observation of the coincidences, the same mode was followed as in the experiments at Greenwich. The temperature of the pendulum, however, was more frequently taken by means of a small telescope, placed outside of the room, at a window to the south, and on the same level with the thermometer, suspended a little below the middle of the pendulum for that purpose.

The weather on the whole was favourable during this series; it became somewhat unsettled toward the close; but as no day passed without at least one transit for the rate of the clock, I had no reason to be dissatisfied with any of the observations taken.

A second series was made in July, under more favourable

circumstances of weather, the results of which, differ only one-tenth of a vibration in 24 hours from those in June. The total number of factors for the first series being 275,5, and for the second 66, a mean in that ratio has finally been taken.

The experiment marked III. was made at the Royal Observatory at Greenwich in November, 1825, after the return of the Expedition.

The number of vibrations in 24 hours, deduced from this experiment, differing more than was likely to arise from errors in observation, being 0,24 of a vibration in excess of the number obtained before leaving England in 1824, I thought it right to repeat the experiment, especially as the rate of the clock appeared to be somewhat unsteady. The results of this repetition, made with the rate of the clock more uniform, being precisely the same, I have not considered it necessary to give them in detail.

The difference alluded to in the number of vibrations of the pendulum in 24 hours, being on that side which would arise from the effects of wear of the knife edge of the pendulum, and which seemed probable, from the fine metallic line distinguishable on the agate planes after its removal, I feel disposed to adopt this explanation; and assuming an equable wear, I have taken the mean of the first and last series, as the actual number of vibrations made at Greenwich, to compare with those at Port Bowen, which being intermediate, of course required no correction on that account.

The results of this comparison are given in a subsequent page preceding the third set of experiments. It will therefore be sufficient to state here, that the ellipticity of the earth deduced from these experiments, appears to be $\frac{1}{309,2}$.

The experiments above described are of a nature to require, at every stage, the utmost degree of care; since an error, very small in apparent amount, either in the observations themselves, or in the subsequent computations, may prove fatal to that minute accuracy, without a due attention to which the nice objects of this problem might easily elude our notice.

It will readily be understood, therefore, by every one conversant with such undertakings, that the observer, besides possessing adequate leisure, must be duly assisted in all parts of his progress by those persons with whom he is associated. And as it has been my good fortune to meet not only with the heartiest encouragement, but also the most efficient co-operation from the Commander of the Expedition, throughout the whole course of these and various other delicate researches, I feel it my duty not less on public grounds, than as a matter of private respect and gratitude, to make this acknowledgment of the source, to which every thing that may appear valuable in these enquiries is justly to be traced.

HENRY FOSTER.

No. I. *Pendulum Experiments at the Royal Observatory at Greenwich*, 1824.

April 1824.

Comparisons of the Clock with the Observatory Transit Clock.

Date.	Time by Clock.	Time by the Observatory Clock.	Mean Time at Greenwich	Clock slow of Mean Time.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.
20th Noon	0 17 00	2 55 15,45	1 1 3,07	0 44 3,07
P. M.	3 38 00	6 16 48,84	4 22 3,47	0 44 3,47
21st A. M.	7 12 00	21 53 24,66	7 56 5,96	0 44 5,96
Noon	11 22 00	2 4 6,42	0 6 6,72	0 44 6,72
P. M.	3 50 00	6 33 51,20	4 34 7,38	0 44 7,38
22d A. M.	7 56 00	22 38 00,22	8 40 9,60	0 44 9,60
Noon	11 42 00	2 28 9,48	0 26 10,08	0 44 10,08
P. M.	3 30 00	6 16 47,16	4 14 10,35	0 44 10,35
23d A. M.	8 5 00	22 54 32,95	8 49 12,75	0 44 12,75
Noon	11 22 00	2 12 5,85	0 6 13,25	0 44 13,25
P. M.	3 32 00	6 22 47,40	4 16 13,73	0 44 13,73
24th A. M.	7 38 00	22 31 27,81	8 22 15,56	0 44 15,56
Noon	11 21 00	2 15 5,0	0 5 16,20	0 44 16,20
P. M.	3 37 00	6 31 47,41	4 21 16,57	0 44 16,57
25th A. M.	8 17 00	23 14 33,70	9 1 18,64	0 44 18,64
Noon	11 18 00	2 16 4,20	0 2 19,40	0 44 19,40

From the preceding Table of Comparisons, this, of Rates losing has been deduced.

Time of Comparison.	From 20 to 21	From 20 to 22	From 20 to 23	From 20 to 24	From 20 to 25	From 21 to 22	From 21 to 23	From 21 to 24	From 21 to 25	From 22 to 23	From 22 to 24	From 22 to 25	From 23 to 24	From 23 to 25	From 24 to 25
h.	s.	s.	s	s.	s	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
8 A. M.	——	——	——	——	——	3,53	3,33	3,18	3,13	3,13	3,00	3,00	2,87	2,93	3,00
Noon	3,79	3,55	3,44	3,31	3,29	3,31	3,26	3,16	3,17	3,21	3,08	3,12	2,95	3,08	3,20
4 P. M.	3,88	3,45	3,42	3,27	——	3,01	3,19	3,07	——	3,38	3,10	——	2,83	——	——
Rate in a mean solar day.	3,83	3,50	3,43	3,29	3,29	3,28	3,26	3,14	3,15	3,24	3,06	3,06	2,88	3,00	3,10

Observations of Coincidences at Greenwich, April 1824.

Height above the level of the sea 181,5 feet.

P. M. 20th April, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 30.21 / Ending . 30.19 } 30.20 mean.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Observed vibra. corr. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Disappearance and Re-app.		Disappearance.	Disappearance and Re-app.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
59	1 29 4	29 8	29 6	1.18	1.140	693	693	.....	.....	2.125	.....	.....
	40 37	40 41	40 39	1.10	1.060	693	693,5	.....	.....	1.838	.....	.....
	52 10	52 15	52 12,5	1.02	0.980	692	693,5	.....	.....	1.571	.....	.....
	2 3 42	3 50	3 46	0.94	0.905	695	695	.....	.....	1.339	.....	.....
	15 17	15 25	15 21	0.87	0.845	694	694	.....	.....	1.168	.....	.....
	26 51	26 59	26 55	0.82	0.790	696	696	.....	.....	1.021	.....	.....
	38 27	38 35	38 31	0.76	0.740	693	693,5	.....	.....	0.896	.....	.....
	50 00	50 9	50 4,5	0.72	0.695	697	697,5	.....	.....	0.790	.....	.....
	3 1 37	1 47	1 42	0.67	0.650	695	695	.....	.....	0.691	.....	.....
59	13 12	13 22	13 17	0.63								
59	Mean.					694,22	694,55	86147,81	86147,92	1.27	86149,08	86149,19

A. M. 21st April, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 30,02 / Ending . 29,98 } 30,00 mean.

54,5	8 33 20	33 25	33 22,5	1.17	1.125	699	699,5	.....	.....	2.070	.....	.....
	44 59	45 5	45 2	1.08	1.035	698	698,5	.....	.....	1.753	.....	.....
	56 37	56 44	56 40,5	0.99	0.955	700	700,5	.....	.....	1.492	.....	.....
	9 8 17	8 25	8 21	0.92	0.890	699	699,5	.....	.....	1.295	.....	.....
	19 56	20 5	20 0,5	0.86	0.840	699	699,5	.....	.....	1.154	.....	.....
	31 35	31 45	31 40	0.82	0.790	698	699	.....	.....	1.021	.....	.....
	43 13	43 25	43 19	0.76	0.730	699	699,5	.....	.....	0.873	.....	.....
	54 52	55 5	54 58,5	0.70	0.680	702	700	.....	.....	0.757	.....	.....
	10 6 34	6 43	6 38,5	0.66	0.635	696	698	.....	.....	0.661	.....	.....
56,7	18 10	18 23	18 16,5	0.61								
55,6	Mean.					698,89	699,33	86 49,47	86149,62	1.23	86150,70	86150,85

Observations of Coincidences at Greenwich—continued.

Height above the level of the sea 181,5 feet.

P. M. 21st April, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29.90 / Ending.. 29.86 } = 29.88 mean.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Observed vibra. corr. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Disappearance and Re-ap.		Disappearance.	Disappearance and Re-app.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
58,5	1 31 17	31 23	31 20	1.22	1.180	692	691,5	.....	.....	2.278	.....	.....
	42 49	42 54	42 51,5	1.14	1.100	693	693	.....	.....	1.978	.....	.....
	54 22	54 27	54 24,5	1.06	1.025	693	693,5	.....	.....	1.719	.....	.....
	2 5 55	6 1	5 58	0.99	0.955	692	694	.....	.....	1.492	.....	.....
	17 27	17 37	17 32	0.92	0.885	696	695	.....	.....	1.281	.....	.....
	29 3	29 11	29 7	0.85	0.825	694	694	.....	.....	1.113	.....	.....
	40 37	40 45	40 41	0.80	0.775	695	695,5	.....	.....	0.982	.....	.....
	52 12	52 21	52 16,5	0.75	0.725	693	694,5	.....	.....	0.860	.....	.....
	3 3 45	3 57	3 51	0.70	0.675	695	695	.....	.....	0.746	.....	.....
59,9	15 20	15 32	15 26	0.65								
59,2	Mean.					693,67	694	86147,61	86147,73	1.38	86148,99	86149,11

A. M. 22d April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,81 / Ending.. 29,84 } = 29,825 mean.

54,5	8 48 32	48 37	48 34,5	1.20	1.160	696	696	.....	.....	2.200	.....	.....
	9 00 8	00 13	00 10,5	1.12	1.080	696	697	.....	.....	1.908	.....	.....
	11 44	11 51	11 47,5	1.04	1.005	698	698	.....	.....	1.652	.....	.....
	23 22	23 29	23 25,5	0.97	0.940	698	696,5	.....	.....	1.446	.....	.....
	35 00	35 4	35 2	0.91	0.875	696	698	.....	.....	1.252	.....	.....
	46 36	46 44	46 40	0.84	0.810	696	697	.....	.....	1.073	.....	.....
	58 12	58 22	58 17	0.78	0.755	696	696	.....	.....	0.931	.....	.....
	10 9 48	9 58	9 53	0.73	0 705	697	697,5	.....	.....	0.812	.....	.....
	21 25	21 36	21 20,5	0.68	0.655	698	697	.....	.....	0.702	.....	.....
58,8	33 3	33 12	33 7,5	0.63								
56,6	Mean.					696,78	697	86148,72	86148,80	1.33	86150,05	86150,13

Observations of Coincidences at Greenwich—continued.

Height above the level of the sea 181,5 feet.

P. M. 22d April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,85 / Ending...29,87 } 29,86 mean.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. corr. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Disappearance and Re-ap.		Disappearance	Disappearance and Re-app.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
59,5	1 29 55	29 59	29 57	1.20	1.160	690	690,5	.....	.....	2.200	.....	.. ...
	41 25	41 30	41 27,5	1.12	1.080	691	691,5	.....	.....	1.908	.....	.....
	52 56	53 2	52 59	1.04	1.000	692	692,5	.....	.....	1.635	.....	.....
	2 4 28	4 35	4 31,5	0.96	0.925	691	691,5	.....	.....	1.400	.....	.....
	15 59	16 7	16 3	0.89	0.860	692	692,5	.....	.....	1.210	.....	.....
	27 31	27 40	27 35,5	0.83	0.800	693	692,5	.....	.....	1.046	.....	.....
	39 4	39 12	39 8	0.77	0.745	693	694,5	.....	.....	0.908	.....	.....
	50 37	50 48	50 42,5	0.72	0.695	691	691,5	.....	.....	0.790	.....	.....
	3 2 8	2 20	2 14	0.67	0.645	694	693	.....	.....	0.681	.....	.....
61,0	13 42	13 52	13 47	0.62								
60,2	Mean.					691,89	692,22	86146,97	86147,09	1.31	86148,28	86148,40

A. M. 23d April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,44 / Ending... 29,34 } = 29,39 mean.

53,8	8 47 21	47 25	47 23	1.18	1,135	698	698	.....	.....	2.107	.....	.....
	58 59	59 3	59 1	1.09	1,055	698	699	.....	.....	1.820	.....	.....
	9 10 37	10 43	10 40	1.02	0,985	699	700	.....	.....	1.587	.....	.....
	22 16	22 24	22 20	0.95	0,920	700	699	.....	.....	1.384	.....	.....
	34 56	35 2	34 59	0.89	0,865	699	699,5	.....	.....	1.224	.....	.....
	46 35	46 42	46 38,5	0.84	0,810	699	700	.....	.....	1.073	.....	.....
	57 14	57 23	57 18,5	0.78	0,755	701	700,5	.....	.....	0.932	.....	.....
	10 8 55	9 3	8 59	0.73	0,710	700	700,5	.....	.....	0.824	.....	.....
	20 35	20 44	20 39,5	0.69	0,665	701	701	.....	.....	0.724	.....	.....
53,9	32 16	32 25	32 20,5	0.64								
53,8	Mean.					699,44	699,72	86149,67	86149,76	1.30	86150,97	86151,06

Observations of Coincidences at Greenwich — continued.

Height above the level of the sea 181,5 feet.

P. M. 23d April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,17 / Ending...29,12 } = 29,145 mean.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. corr. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Disappearance and Re-ap.		Disappearance.	Disappearance and Re-app.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
52,5	1 25 29	25 31	25 30	1.22	1.180	698	699	.....	.....	2.278	.....	.....
	37 7	37 11	37 9	1.14	1.100	700	700	.....	.....	1.978	.....	.....
	48 47	48 51	48 49	1.06	1.025	699	699,5	.....	.....	1.719	.....	.....
	2 00 26	00 31	00 28,5	0.99	0.965	699	700,5	.....	.....	1.524	.....	.....
	12 5	12 13	12 9	0.94	0.910	700	700,5	.....	.....	1.354	.....	.....
	23 45	23 54	23 49,5	0.88	0.850	701	700,5	.....	.....	1.181	.....	.....
	35 26	35 34	35 30	0.82	0,790	702	703	.....	.....	1.021	.....	.....
	47 8	47 18	47 13	0.76	0.730	702	701,5	.....	.....	0.872	.....	.....
	58 50	58 59	58 54,5	0.70	0.675	701	701,5	.....	.....	0.746	.....	.....
53,2	3 10 31	10 41	10 36	0.65								
52,8	Mean.					700,22	700,67	86149,94	86150,10	1.41	86151,35	86151,51

A. M. 24th April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,86 / Ending...29,94 } = 29,90 mean.

51,5	8 41 56	42 1	41 58,5	1.16	1.115	700	700	.....	.....	2.033	.....	.....
	53 36	53 41	53 38,5	1.07	1.025	700	700	.....	.....	1.719	.....	.....
	9 5 16	5 21	5 18,5	0.98	0.950	700	701	.....	.....	1.476	.....	.....
	16 56	17 3	16 59,5	0.92	0.885	700	701	.....	.....	1.281	.....	.....
	28 36	28 45	28 40,5	0.85	0.820	701	700,5	.....	.....	1.100	.....	.....
	40 17	40 25	40 21	0.79	0.765	700	701	.....	.....	0.956	.....	.....
	51 57	52 7	52 2	0.74	0.715	701	700,5	.....	.....	0.835	.....	.....
	10 3 38	3 47	3 42,5	0.69	0 665	701	701,5	.....	.....	0.724	.....	.....
	15 19	15 29	15 24	0.64	0.620	699	700,5	.....	.....	0.629	.....	.....
54,5	26 58	27 11	27 4,5	0.60								
53,0	Mean.					700,22	700,67	86149,94	86150,10	1.19	86151,13	86151,29

Observations of Coincidences at Greenwich—continued.

Height above the level of the sea 181,5 feet.

P. M. 24th April, 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 30.00 / Ending .. 30.03 } 30.015 mean.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. corr. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Disappearance and Re-app.		Disappearance.	Disappearance and Re-app.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
55,9	1 45 17	45 21	45 19	1.18	1.135	694	695	.....	.....	2.107	.....	.....
	56 51	56 57	56 54	1.09	1.055	696	696	.....	.....	1.820	.....	.....
	2 8 27	8 33	8 30	1.02	0.985	694	694,5	.....	.....	1.587	.....	.....
	20 1	20 8	20 4,5	0.95	0.910	695	696	.....	.....	1.354	.....	.....
	31 36	31 45	31 40,5	0.87	0.845	697	696	.....	.....	1.168	.....	.....
	43 13	43 20	43 16,5	0.82	0.795	695	696	.....	.....	1.034	.....	.....
	54 48	54 57	54 52,5	0.77	0.745	695	696	.....	.....	0.908	.....	.....
	3 6 23	6 34	6 28,5	0.72	0.690	698	697,5	.....	.....	0.779	.....	.....
	18 1	18 11	18 6	0.66	0.640	695	696	.....	.....	0.671	.....	.....
58,0	29 36	29 48	29 42	0.62								
56,9	Mean.					695,44	695,89	86148,24	86148,41	1.27	86149,51	86149,68

A. M. 25th April, 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 30.05 / Ending... 30.045 } =30.047 mean.

51,5	8 52 27	52 31	52 29	1.16	1.115	701	701,5	.... .	. ....	2.033	.....	.....
	9 4 8	4 13	4 10,5	1.07	1.030	701	701	.....	.....	1.735	.....	.....
	15 49	15 54	15 51,5	0.99	0.955	701	702	.....	.....	1.492	.....	.....
	27 30	27 37	27 33,5	0.92	0.885	702	702	.....	.....	1.281	.....	.....
	39 12	39 19	39 15,5	0.85	0.825	701	701,5	.....	.....	1.113	.....	.....
	50 53	51 1	50 57	0.80	0.775	702	702	.....	.....	0.982	.....	.....
	10 2 35	2 43	2 39	0.75	0.725	700	701	.....	.....	0.860	.....	.....
	14 15	14 25	14 20	0.70	0.675	702	701	.....	.....	0.746	.....	.....
	25 57	26 5	26 1	0.65	0.635	701	702	.....	.....	0.661	.....	.....
54,8	37 38	37 48	37 43	0.62								
53,1	Mean.					701,22	701,56	86150,29	86150,41	1.21	86151,50	86151,62

Vibrations of the Pendulum at the Royal Observatory at Greenwich.

The Clock making 86396,71 vibrations at a mean rate in a mean solar day, April 1824.

Date.	Barom.	Therm.	Diff. between Temp. Pend. and 50°.	Vibrations of Pendulum in 24 h. corrected for Arc by		Corrections for Temperature.	Vibrations in 24 hours at temperature of 50°.	
				Disappearance.	Mean of Disap. and Re-app.		Disappearance.	Mean of Disap. and Re-ap.
	Inches.	o	o			vib.		
20th P. M.	30,20	59,0	9,0	86149,08	86149,19	+ 3,81	86152,89	86153,00
21st A. M.	30,00	55,6	5,6	86150,70	86150,85	+ 2,37	86153,07	86153,22
P. M.	29,88	59,2	9,2	86148,99	86149,11	+ 3,89	86152,88	86153,00
22d A. M.	29,82	56,6	6,6	86150,05	86150,13	+ 2,79	86152,84	86152,92
P. M.	29,86	60,2	10,2	86148,28	86148,40	+ 4,31	86152,59	86152,71
23d A. M.	29,39	53,8	3,8	86150,97	86151,06	+ 1,61	86152,58	86152,67
P. M.	29,14	52,8	2,8	86151,35	86151,51	+ 1,18	86152,53	86152,69
24th A. M.	29,90	53,0	3,0	86151,13	86151,29	+ 1,27	86152,40	86152,56
P. M.	30,01	56,9	6,9	86149,51	86149,68	+ 2,29	86152,43	86152,60
25th A. M.	30,05	53,1	3,1	86151,50	86151,62	+ 1,31	86152,81	86152,93
Mean . .	29,82	56,0					86152,70	86152,83

Results.

1824.	Correct Number of Vibrations made by the Pendulum in a mean solar day, by	
	Disappearance.	Mean of Disap. and Re-ap.
From 20th April P. M. to 21st A. M.	86152,44	86152,57
22d	86152,71	86152,82
23d	86152,67	86152,78
24th	86152,72	86152,85
25th	86152,70	86152,83
— 21st — P. M. to 22d A. M.	86152,87	86152,97
23d	86152,75	86152,85
24th	86152,79	86152,91
25th	86152,77	86152,90
— 22d — P. M. to 23d A. M.	86152,63	86152,74
24th	86152,75	86152,89
25th	86152,79	86152,92
— 23d — P. M. to 24th A. M.	86152,87	86153,03
25th	86152,83	86152,98
— 24th — P. M. to 25th A. M.	86152,81	86152,95
Mean	86152,74	86152,87
Barom. 29,82, Ther. 56,0°, Buoyancy	= + 6,06	+ 6,06
Elevation 181,5 feet, Correction $= 0{,}75 \times \frac{6}{10}$ . . .	= + 0,45	+ 0,45
No. of vibra. at Greenwich in vacuo at the level of the sea, temp. 50° of Fah.	86159,25	86159,38

The above correction for buoyancy of the atmosphere, has been deduced from the mean height of the barometer 29,82, and temperature 56°,0, together with the specific gravity of the pendulum supposed to be 8,61. That for elevation, by the duplicate ratio of distances from the earth's centre (3954,583 miles) the ball of the pendulum at Greenwich being $181\frac{1}{2}$ feet above the level of the sea. This was deduced from the Account of the Trigonometrical Survey of Great

Britain; from which it appears that the height of the theodolite above the level of the sea was - 214 feet.

Theodolite above the floor of the transit room	=	38
Floor of transit room above the level of the sea	=	176
Ball of pendulum above floor of transit room	=	$5\frac{1}{2}$
Ball of pendulum above the level of the sea -	=	$181\frac{1}{2}$

From the nature of the eminence, however, on which the pendulum stood, I have taken $\frac{6}{10}$ of the correction so obtained, as the proper correction due to this elevation.

June, 1825.

Experiment II. *at Port Bowen in Prince Regent's Inlet.*

Comparison of Chronometer I. with Clock at Port Bowen—(1st Series.)

Date.	Chronometer.	Clock.	Difference.
	h. m. s.	h. m. s.	h. m. s.
June 14th, P. M.	10 42 8,5	8 14 00	2 28 8,5
——	10 53 8	8 25 00	2 28 8
——	3 6 56	12 39 00	2 27 56
——	3 16 55,5	12 49 00	2 27 55,5
Noon, 15th .	2 2 25	11 35 00	2 27 25
——	2 23 24	11 56 00	2 27 24
P. M. 16th . .	10 56 51,5	8 31 00	2 25 51,5
——	11 6 51	8 41 00	2 25 51
Noon, 17th .	1 4 8,5	11 39 00	2 25 8,5
——	2 26 7,5	12 1 00	2 25 7,5
Noon, 18th .	2 2 1	11 38 00	2 24 1
——	2 23 59	11 59 00	2 23 59
P M. . .	10 27 37,5	8 4 00	2 23 37,5
——	10 37 37,0	8 14 00	2 23 37
——	2 42 25,5	12 19 00	2 23 25,5
——	3 4 24,5	12 41 00	2 23 24,5
Noon, 19th .	2 11 53	11 49 00	2 22 53
——	2 22 52,5	12 00 00	2 22 52,5
P. M. . . .	10 26 30	8 4 00	2 22 30
——	10 36 29,5	8 14 00	2 22 29,5
——	2 32 18,5	12 10 00	2 22 18,5
——	3 4 17	12 42 00	2 22 17
Noon, 20th .	2 4 46	11 43 00	2 21 46
——	2 26 45	12 5 00	2 21 45
P. M. . . .	10 17 23	7 56 00	2 21 23
——	10 38 22	8 17 00	2 21 22
——	2 43 10,5	12 22 00	2 21 10,5
——	2 53 10	12 32 00	2 21 10
Noon, 21st . .	1 56 39	11 36 00	2 20 39
——	2 28 37,5	12 8 00	2 20 37,5
Noon, 22d . .	2 6 31	11 47 00	2 19 31
——	2 27 30	12 8 00	2 19 30
P. M. . . .	10 13 8	7 54 00	2 19 8
——	10 23 7,5	8 4 00	2 19 7,5
——	2 37 55,5	12 19 00	2 18 55,5
——	2 48 55	12 30 00	2 18 55
Noon, 23d . .	2 4 23	11 46 00	2 18 23
——	2 25 22	12 7 00	2 18 22
P. M. . . .	10 11 00	7 53 30	2 18 00
——	10 21 59,5	8 4 00	2 17 59,5
——	2 46 47	12 29 00	2 17 47
——	2 57 46,5	12 40 00	2 17 46,5

Transits observed at Port Bowen, June 1825—(*1st Series.*)

Date.	Stars.	1st Wire observed.	1st Wire corrected.	2nd.	3rd Wire meridian.	4th.	5th.	Mean Chron.	Comparison of Chron. and Clock.	Mean Clock.	Clock at mean Noon.
		h. m. s.	m. s.	m. s.	h. m. s.	m. s.	m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
June 14th	Arcturus . .	.....	....	.....	10 50 27,5	50 55	51 22,5	.....	2 28 8,12	8 22 19,38	(3rd wire.).
P. M.	α Lyræ . . .	3 11 58,5	11 59,4	12 32,5	3 13 5	13 37,75	14 10,5	3 13 5,02	2 27 55,69	12 45 9,33	
	⊙'s 1st Limb	2 13 1,5	.....	13 31	2 13 58,5	14 26,5	14 54,5				
15th	⊙'s 2nd Limb	2 15 19	.....	15 48	2 16 16	16 44	17 12				
	⊙'s Centre .	2 14 10,25	14 11,01	14 39,5	2 15 7,25	15 35,25	16 3,25	2 15 7,25	2 27 24,4	11 47 42,85	11 47 41,29
16th, P. M.	Arcturus . .	.....	.....	42 11,5	10 42 39	.....	.....	.....	2 25 52,21	8 16 46,79	(3rd wire.)
	⊙'s 1st Limb	2 13 30	.....	13 59	2 14 27	14 55,5	15 23				
17th	⊙'s 2nd Limb	2 15 47,9	.....	16 17,2	2 16 45	17 13,5	17 41,5				
	⊙'s Centre .	2 14 38,95	14 39,71	15 8,1	2 15 36	16 4,5	16 32,25	2 15 36,09	2 25 8,0	11 50 28,09	11 50 0,78
	⊙'s 1st Limb	2 13 45	.....	14 14	2 14 42,25	15 10	15 37,2				
18th	⊙'s 2nd Limb	2 16 2	.....	16 31	2 16 59,25	17 27,5	17 56				
	⊙'s Centre .	2 14 53,5	14 54,26	15 22,5	2 15 50,75	16 18,75	16 46,6	2 15 50,59	2 23 59,74	11 51 50,85	11 51 10,52
P. M.	Arcturus . .	.....	.....	.....	.....	.....	10 35,46	.....	2 23 37,07	8 12 8,93	(5th wire.)
——	α Lyræ . . .	2 56 22	56 22,9	56 56	2 57 28,8	58 2	58 34,5	2 57 28,83	2 23 24,81	12 34 4,02	
	⊙'s 1st Limb	2 14 00	.....	14 29	2 14 57,5	15 26	15 53,5				
19th	⊙'s 2nd Limb	2 16 18	.....	16 47	2 17 15	17 43,5	18 12,2				
	⊙'s Centre .	2 15 9	15 9,76	15 38	2 16 6,25	16 34,75	17 2,85	2 16 6,31	2 22 52,81	11 53 13,50	11 52 20,07
P. M.	Arcturus . .	10 30 2	30 2,74	30 30	10 30 57	31 25	31 52	10 30 57,29	2 22 29,78	8 8 27,51	
——	α Lyræ . . .	2 52 28,5	52 29,4	53 2,5	2 53 35,25	54 8	54 41	2 53 35,23	2 22 17,5	12 31 17,73	
20th, P. M.	Arcturus . .	10 26 9	26 9,74	26 37	10 27 4	27 31,5	27 59	10 27 4,21	2 21 22,54	8 5 41,67	
——	α Lyræ . . .	2 48 35	48 35,9	49 9	2 49 41,5	50 14,5	50 47,5	2 49 41,65	2 21 10,33	12 28 31,32	
	⊙'s 1st Limb	2 14 31	.....	15 0,5	2 15 28	15 56,5	16 24,2				
21st	⊙'s 2nd Limb	2 16 50	.....	17 18,5	2 17 46,5	18 15	18 43				
	⊙'s Centre .	2 15 40,5	15 41,26	16 9,5	2 16 37,25	17 5,75	17 33,6	2 16 37,43	2 20 38,06	11 55 59,37	11 54 39,86
	⊙'s 1st Limb	2 14 46	.....	15 15,8	2 15 43,5	16 11,8	16 39,5				
22nd	⊙'s 2nd Limb	2 17 4,5	.....	17 33,5	2 18 1	18 29,7	18 58				
	⊙'s Centre .	2 15 55,25	15 56,01	16 24,65	2 16 52,25	17 20,75	17 48,75	2 15 52,44	2 19 30,51	11 57 21,93	11 55 49,45
P. M.	Arcturus . .	10 18 21,5	18 22,24	18 50	10 19 17,25	19 44,5	20 12	10 19 17,21	2 19 7,69	8 0 9,52	
——	α Lyræ . . .	2 40 47,5	40 48,4	41 21,5	2 41 54,5	42 27,5	43 0,5	2 41 54,48	2 18 55,32	12 22 59,16	
	⊙'s 1st Limb	2 15 1	.....	15 30,5	2 15 58,5	16 26,5	16 54,5				
23rd	⊙'s 2nd Limb	2 17 19,5	.....	17 48,5	2 18 16,5	18 44,5	19 12,7				
	⊙'s Centre .	2 16 10,25	16 11,01	16 39,5	2 17 7,5	17 35,5	18 3,6	2 17 7,43	2 18 22,39	11 58 45,04	11 56 59,66
P. M.	Arcturus . .	10 14 28	14 28,74	14 56	10 15 23,5	15 51	16 18	10 15 23,46	2 17 59,8	7 57 23,66	
——	α Lyræ . . .	2 36 54	36 54,9	37 28	2 38 0,5	38 33,5	39 6,5	2 38 0,65	2 17 47,4	22 20 13,25	

Observation of Coincidences at Port Bowen, June 1825 (*1st Series.*)

Night, June 14th, 1825, Port Bowen. Hygr. { Temp. 50°.5. Dew P. 36°. } Barr. { Begs. 29.850 temp. of mer. 45° Ends. 29.850 — 45° } = 29.918 mean cor. to temp. pend.
Clock gaining at a mean rate 69s.88.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
50,5	9 46 26	46 30	46 28	1.17	1.125	693	696	86220,328	86221,403	2.069	86222,397	86223,472
	57 59	58 9	58 4	1.08	1.040	694	695	86220,687	86221,046	1.768	86222,455	86222,814
	10 9 33	9 45	9 39	1.00	0.960	704	701	86224,227	86223,176	1.507	86225,734	86224,683
	21 17	21 23	21 20	0.92	0.890	698	699	86222,116	86222,470	1.295	86223,411	86223,765
	32 55	33 3	32 59	0.86	0.830	698	698,5	86222,116	86222,293	1.122	86223,238	86223,415
51	44 33	44 42	44 37,5	0.80	0.770	699	699	86222,470	86222,470	0.969	86223,439	86223,439
	56 12	56 21	56 16,5	0.74	0.715	698	699	86222,116	86222,470	0.836	86222,952	86223,306
	11 7 50	8 1	7 55,5	0.69	0.670	698	699	86222,116	86222,470	0.734	86222,850	86223,204
	19 28	19 41	19 34,5	0.65	0.620	699	699,5	86222,470	86222,647	0.628	86223,098	86223,275
51	31 7	31 21	31 14	0.59								
50,83	Mean.										86223,286	86223,486
									Correction for Temp. 0°.83.		+ 0,351	+ 0,351
0,83	Diff. to 50°.								Vibra.. in 24 h. at Temp. 50°.		86223,637	86223,837

Morning, June 15th, 1825, Port Bowen. Hygr. { Temp. 49°,0. Dew Pt. 35°. } Barr. { Begg. 29,850 mer. 45° Endg. 29,859 — 41° } = 29,922 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

50,5	1 40 54	40 58	40 56	1.15	1.110	696	697	86221,403	86221,760	2.014	86223,417	86223,774
	52 30	52 36	52 33	1.07	1.025	698	698	86222,116	86222,116	1.718	86223,834	86223,834
	2 4 8	4 14	4 11	0.98	0.950	698	698,5	86222,116	86222,293	1.476	86223,592	86223,769
	15 46	15 53	15 49,5	0.92	0.890	701	701,5	86223,176	86223,352	1.295	86224,471	86224,647
	27 27	27 35	27 31	0.86	0.830	700	700,5	86222,823	86223,000	1.122	86223,945	86224,122
49,1	39 7	39 16	39 11,5	0.80	0.775	700	701	86222,823	86223,176	0.982	86223,805	86224,158
	50 47	50 58	50 52,5	0.75	0.725	700	701,5	86222,823	86223,352	0.859	86223,682	86224,211
	3 2 27	2 41	2 34	0.70	0.675	707	705,5	86225,269	86224,750	0.745	86226,014	86225,495
	14 14	14 25	14 19,5	0.65	0.625	704	704	86224,227	86224,227	0.638	86224,865	86224,865
47	25 58	26 9	26 3,5	0.60								
48,87	Mean.										86224,181	86224,319
									Correction for Temp. 1°.13.		— 0,479	— 0,479
1,13	Diff. to 50°.								Vibra. in 24h at Temp. 50°.		86223,702	86223,840

Observation of Coincidences at Port Bowen (1st Series)—continued.

Forenoon, 15th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 49°. Dew Pt. 32°. } Barr. { Begg. 29.846 mer. 43°.5. Endg. 29.832 — 45° . } = 29.906 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
49	9 7 41	7 45	7 43	1.20	1.160	698	698,5	86222,116	86222,293	2.200	86224,316	86224,493
	19 19	19 24	19 21,5	1.12	1.075	700	700	86222,823	86222,823	1.889	86224,712	86224,712
	30 59	31 4	31 1,5	1.03	0.995	699	700	86222,470	86222,823	1.618	86224,088	86224,441
	42 38	42 45	42 41,5	0.96	0.925	701	700,5	86223,176	86223,000	1.399	86224,575	86224,399
49	54 19	54 25	54 22	0.89	0.860	700	701	86222,823	86223,176	1.209	86224,032	86224,385
	10 5 59	6 7	6 3	0.83	0.800	701	701	86223,176	86223,176	1.046	86224,222	86224,222
49	17 40	17 48	17 44	0.77	0.745	702	702,5	86223,527	86223,703	0.907	86224,434	86224,610
	29 22	29 31	29 26,5	0.72	0.700	701	701,5	86223,176	86223,352	0.801	86223,977	86224,153
	41 3	41 13	41 8	0.68	0.660	702	702	86223,527	86223,527	0.712	86224,239	86224,239
49,2	52 45	52 55	52 50	0.64								
49,05	Mean.										86224,288	86224,406
0,95	Diff. to 50°.									Correction for Temp. 0°.95.	— 0,402	—,402
										Vibrations in 24 h. at Temp. 50°.	86223,886	86224,004

Afternoon, 15th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 49°. Dew Pt. 30°. } Barr. { Begg. 29.799 mer. 44½°. Endg. 29.789 — 43½°. } = 29.857 mean cor. to temp. of pend.

47	1 20 33	20 38	20 35,5	1.12	1.080	701	701	86223,176	86223,176	1.907	86225,083	86225,083
	32 14	32 19	32 16,5	1.04	1.005	702	702,5	86223,527	86223,703	1.650	86225,177	86225,353
	43 56	44 2	43 59	0.97	0.935	703	703,5	86223,878	86224,053	1.429	86225,307	86225,482
	55 39	55 46	55 42,5	0.90	0.870	703	702	86223,878	86223,527	1.237	86225,115	86224,764
46,5	2 7 22	7 27	7 24,5	0.84	0.810	702	703	86223,527	86223,878	1,073	86224,600	86224,951
	19 4	19 11	19 7,5	0.78	0.750	704	704	86224,227	86224,227	0.920	86225,147	86225,147
	30 48	30 55	30 51,5	0.72	0.690	704	705	86224,227	86224,576	0.776	86225,003	86225,352
	42 32	42 41	42 36,5	0.66	0.640	704	704	86224,227	86224,227	0.670	86224,897	86224,897
	54 16	54 25	54 20,5	0.62	0.595	706	706	86224,923	86224,923	0.579	86225,502	86225,502
46	3 6 2	6 11	6 6,5	0.57								
46,5	Mean.										86225,092	86225,170
3,5	Diff. to 50°.									Correction for Temp. 3°.5.	— 1,480	— 1,480
										Vibra. in 24 h. at Temp. 50°.	86223,612	86223,690

Observation of Coincidences at Port Bowen (1st Series)—continued.

Night, 15th June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 44°. / Dew Pt. 31°. } Barr. { Begg. 29.772 mer. 42°.5. / Endg. 29.771 — 44°. } = 29.835 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-ap. pearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. cor. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Mean of Disap. and Re-ap.		Disappearance.	Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
44	9 1 23	1 27	1 25	1.16	1.110	703	703,5	86223,878	86224,053	2.014	86225,892	86226,067
44	13 6	13 11	13 8,5	1.06	1.025	703	703,5	86223,878	86224,053	1.718	86225,596	86225,771
44	24 49	24 55	24 52	0.99	0.955	704	705	86224,227	86224,576	1.491	86225,718	86226,067
44	36 33	36 41	36 37	0.92	0.885	705	704,5	86224,576	86224,402	1.280	86225,856	86225,682
44	48 18	48 25	48 21,5	0.85	0.820	703	704,5	86223,878	86224,402	1.099	86224,977	86225,501
46	10 00 1	00 11	00 6	0.79	0.760	704	704	86224,227	86224,227	0.944	86225,171	86225,171
48	11 45	11 55	11 50	0.73	0.705	703	703,5	86223,878	86224,053	0.812	86224,690	86224,865
50	23 28	23 39	23 33,5	0.68	0.660	702	702,5	86223,527	86223,703	0.712	86224,239	86224,415
50,5	35 10	35 22	35 16	0.64	0.620	701	701,5	86223,176	86223,352	0.628	86223,804	86223,980
50,8	46 51	47 4	46 57,5	0.60								
46,53	Mean.										86225,105	86225,280
3,47	Diff. to 50°.							Correction for Temp. 3°.47.			— 1,468	— 1,468
								Vibrations in 24 h. at Temp. 50°.			86223,637	86223,812

Morning, 16th June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 49°. / Dew Pt. 30°. } Barr. { Begg. 29.781 mer. 45° / Endg. 29.761 — 43° } = 29.836 mean cor. to temp. of pend.

49	12 57 4	57 8	57 6	1.17	1.125	699	699,5	86222,470	86222,647	2.069	86224,539	86224,716
	1 8 43	8 48	8 45,5	1.08	1.040	699	699,5	86222,470	86222,647	1.768	86224,238	86224,415
	20 22	20 28	20 25	1.00	0.965	700	700,5	86222,823	86223,000	1.522	86224,345	86224,522
	32 2	32 9	32 5,5	0.93	0.895	700	700,5	86222,823	86223,000	1.309	86224,132	86224,309
48,2	43 42	43 50	43 46	0.86	0.830	700	701,5	86222,823	86223,352	1.122	86223,945	86224,474
	55 22	55 33	55 27,5	0.80	0 775	704	703	86224,227	86223,878	0.982	86225,209	86224,860
47	2 7 6	7 15	7 10,5	0.75	0.725	700	701	86222,823	86223,176	0.860	86223,683	86224,036
	18 46	18 57	18 51,5	0.70	0.675	702	702	86223,527	86223,527	0.745	86224,272	86224,272
	30 28	30 39	30 33,5	0.65	0.630	704	703,5	86224,227	86224,053	0.649	86224,876	86224,702
47	43 12	43 22	43 17	0.61								
47,8	Mean.										86224,360	86224,478
2,2	Diff. to 50°.							Correction for Temp. 2°.2.			— 0,930	— 0,930
								Vibra. in 24 h. at Temp. 50°.			86223,430	86223,548

Observation of Coincidences at Port Bowen (1st Series)—continued.

Forenoon, 16th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 47°. Dew Pt. 38°. } Barr. { Begs. 29.769 mer. 43° Ends. 29.781 — 45° } = 29.843 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds by Clock. Disap.	Interval in seconds by Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
47,2	9 2 57	3 00	2 58,5	1.17	1.125	700	701	86222,823	86223,176	2.069	86224,892	86225,245
49,8	14 37	14 42	14 39,5	1.08	1.040	702	702,5	86223,527	86223,703	1.768	86225,295	86225,471
49,8	26 19	26 25	26 22	1.00	0.965	702	702,5	86223,527	86223,703	1.522	86225,049	86225,225
	38 01	38 8	38 4,5	0.93	0.900	703	703	86223,878	86223,878	1.324	86225,202	86225,202
	49 44	49 51	49 47,5	0.87	0.840	702	703	86223,527	86223,878	1.154	86224,681	86225,032
49,8	10 1 26	1 35	1 30,5	0.81	0.785	704	734	86224,227	86224,227	1.007	86225,234	86225,234
	13 10	13 19	13 14,5	0.76	0.735	702	702	86223,527	86223,527	0.883	86224,410	86224,410
	24 52	25 1	25 56,5	0.71	0.685	703	702,5	86223,878	86223,703	0.766	86224,644	86224,469
	36 35	36 43	36 39	0.66	0.640	702	702,5	86223,527	86223,703	0.670	86224,197	86224,373
49,8	48 17	48 26	48 41,5	0.62								
49,28	Mean.										86224,845	86224,962
0,72	Diff. to 50°.									Correction for Temp. 0°.72.	—0,304	—0,304
										Vibrations in 24 h. at Temp. 50°.	86224,541	86224,658

Afternoon, 16th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 50°. Dew Pt. 38°. } Barr. { Begs. 29.800 mer. 46°. Ends. 29.807 — 46°. } = 29.868 mean cor. to temp. of pend.

49,8	1 29 27	29 30	29 28,5	1.19	1.145	698	698,5	86222,116	86222,293	2.143	86224,259	86224,436
	41 5	41 9	41 7	1.10	1.060	698	698	86222,116	86222,116	1.837	86223,953	86223,953
	52 43	52 47	52 45	1.02	0.980	698	698,5	86222,116	86222,293	1.570	86223,686	86223,863
50,3	2 4 21	4 26	4 23,5	0.94	0.910	698	698,5	86222,116	86222,293	1.354	86223,470	86223,647
	15 59	16 5	16 2	0.88	0.850	699	699,5	86222,470	86222,647	1.178	86223,648	86223,825
50,0	27 38	27 45	27 41,5	0.82	0.790	700	700	86222,823	86222,823	1.020	86223,843	86223,843
49,8	39 18	39 25	39 21,5	0.76	0.735	700	700,5	86222,823	86223,000	0.883	86223,706	86223,883
	50 58	51 6	51 2	0.71	0.685	700	701,5	86222,823	86223,352	0.766	86223,589	86224,118
	3 2 38	2 47	2 43,5	0.66	0.635	700	700	86222,823	86222,823	0.659	86223,482	86223,482
50,0	14 18	14 29	14 23,5	0.61								
49,98	Mean.										86223,737	86223,894
0,02	Diff. to 50°.									Correction for Temp. 0°.02.	—0,008	—0,008
										Vibra. in 24 h. at Temp. 50°.	86223,729	86223,886

Observation of Coincidences at Port Bowen (1st Series)—continued.

Night, 16th June, 1825, Port Bowen.
Clock gaining at a mean rate 69ˢ.88.
Hygʳ. { Temp. 49°. / Dew Pt. 35°. } Barʳ. { Begᵍ. 29.794 mer. 45°. / Endˢ. 29.794 — 45°. } = 29.859 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
49,2	9 47 14	47 17	47 15,5	1.19	1.145	699	699,5	86222,470	86222,647	2.143	86224,613	86224,790
	59 53	59 57	59 55	1.10	1.060	699	699,5	86222,470	86222,647	1.837	86224,307	86224,484
	10 11 32	11 37	11 34,5	1.02	0.980	699	699,5	86222,470	86222,647	1.570	86224,040	86224,217
49	23 11	23 17	23 14	0.94	0.910	699	699,5	86222,470	86222,647	1.354	86223,824	86224,001
	34 50	34 57	34 53,5	0.88	0.850	700	700,5	86222,823	86223,000	1.178	86224,001	86224,178
	45 30	45 38	45 34	0.82	0.790	699	700	86222,470	86222,823	1.020	86223,490	86223,843
49	57 9	57 19	57 14	0.76	0.735	700	700,5	86222,823	86223,000	0.883	86223,706	86223,883
	11 8 49	9 00	8 54,5	0.71	0.690	700	699,5	86222,823	86222,647	0.776	86223,599	86223,423
	20 29	20 39	20 34	0.67	0.645	701	701,5	86223,176	86223,352	0.681	86223,857	86224,033
49,2	32 10	32 21	22 15,5	0.62								
49,1	Mean.										86223,937	86224,095
0,9	Diff. to 50°.									Correction for Temp. 0°.9.	—0,381	—0,381
										Vibrations in 24 h. at Temp. 50°,	86223,556	86223,714

Morning, 17th June, 1825, Port Bowen.
Clock gaining at a mean rate 69ˢ.88.
Hygʳ. { Temp. 46°. / Dew Pt. 37°. } Barʳ. { Begᵍ. 29.796 mer. 42°. / Endˢ. 29.792 — 42°. } = 29.859 mean cor. to temp. of pend.

46	1 32 51	32 55	32 53	1.16	1.120	700	701,5	86222,823	86223,352	2.051	86224,874	86225,403
	44 31	44 38	44 34,5	1.08	1.040	702	701	86223,527	86223,176	1.768	86225,295	86224,944
	56 13	56 18	56 15,5	1.00	0,965	702	703	86223,527	86223,878	1.522	86225,049	86225,400
46	2 7 55	8 2	7 58,5	0.93	0.900	702	702,5	86223,527	86223,703	1.324	86224,851	86225,027
	19 37	19 45	19 41	0.87	0 840	703	703,5	86223,878	86224,053	1.154	86225,032	86225,207
	31 20	31 29	31 24,5	0.81	0.780	704	704,5	86224,227	86224,402	0.995	86225,222	86225,397
46	43 4	43 14	43 9	0.75	0.725	703	703	86223,878	86223,878	0.859	86224,737	86224,737
	54 47	54 57	54 52	0.70	0.675	705	705,5	86224,576	86224,750	0.745	86225,321	86225,495
	3 6 32	6 43	6 37,5	0.65	0.625	705	704,5	86224,576	86224,402	0.638	86225,214	86225,040
46	18 17	18 27	18 22	0.60								
46	Mean.										86225,066	86225,183
4,0	Diff. to 50°.									Correction for Temp. 4°.0.	— 1,692	— 1,692
										Vibra. in 24 h. at Temp. 50°.	86223,374	86223,491

Observation of Coincidences at Port Bowen (1st Series) — continued.

Forenoon, 17th June, 1825, Port Bowen. Hygr. { Temp. 50°. Dew Pt. 38°. } Barr. { Begs. 29.796 mer. 45°. Ends. 29.800 – 46°.2. } = 29.864 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
50,8	9 10 51	10 55	10 53	1.12	1.080	697	697,5	86221,760	86221,938	1.907	86223,667	86223,845
	22 28	22 33	22 30,5	1.04	1.000	698	698	86222,116	86222,116	1.635	86223,751	86223,751
	34 6	34 11	34 8,5	0.96	0.925	698	699	86222,116	86222,470	1.399	86223,515	86223,869
50,5	45 44	45 51	45 47,5	0.89	0.860	700	700	86222,823	86222,823	1.209	86224,032	86224,032
	57 24	57 31	57 27,5	0.83	0.805	699	699,5	86222,470	86222,647	1.059	86223,529	86223,706
	10 9 3	9 11	9 7	0.78	0.755	701	701,5	86223,176	86223,352	0.932	86224,108	86224,284
49,8	20 44	20 53	20 48,5	0.73	0.705	700	700,5	86222,823	86223,000	0.813	86223,636	86223,813
	32 24	32 34	32 29	0.68	0.655	701	701	86223,176	86223,176	0.701	86223,877	86223,877
	44 5	44 15	44 10	0.63	0 610	702	702	86223,527	86223,527	0.608	86224,135	86224,135
50,7	55 47	55 57	55 52	0.59								
50,45	Mean.										86223,806	86223,924
										Correction for Temp. 0°.45.	+ 0,190	+ 0,190
0,45	Diff. to 50°.									Vib. in 24 h. at Temp. 50°.	86223,996	86224,114

Afternoon, 17th June, 1825, Port Bowen. Hygr. { Temp. 52°. Dew Pt. 40°. } Barr { Begs. 29,812 mer. 47°.8. Ends. 29,820 — 48°. } = 29.882 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

52,2	1 13 34	13 37	13 35,5	1.17	1.125	694	695	86220,687	86221,046	2.069	86222,756	86223,115
	25 8	25 13	25 10,5	1.08	1.045	696	696	86221,403	86221,403	1.785	86223,188	86223,188
	36 44	36 49	36 46,5	1.01	0.970	698	698	86222,116	86222,116	1.538	86223,654	86223,654
51,8	48 22	48 27	48 24,5	0.93	0.895	696	697	86221,403	86221,760	1.309	86222,712	86223,069
	59 58	00 5	00 1,5	0.86	0.835	699	699	86222,470	86222,470	1.138	86223,608	86223,608
	2 11 37	11 44	11 40,5	0.81	0.785	697	697,5	86221,760	86221,938	1.007	86222,767	86222,945
52,0	23 14	23 22	23 18	0.76	0.735	698	698,5	86222,116	86222,293	0.883	86222,999	86223,176
	34 52	35 1	34 56,5	0.71	0.685	699	698,5	86222,470	86222,293	0.766	86223,236	86223,059
	46 31	46 39	46 35	0.66	0.640	697	698	86221,760	86222,116	0.670	86222,430	86222,786
53,0	58 8	58 18	58 13	0.62								
52,25	Mean.										86223,039	86223,178
										Correction for Temp. 2°.25.	+ 0,952	+ 0,952
2,25	Diff. to 50°.									Vibra. in 24 h. at Temp. 50°.	86223,991	86224,130

Observation of Coincidences at Port Bowen (1st Series)—continued.

Night, 17th June, 1825, Port Bowen. Hygr. { Temp. 52°. / Dew Pt. 36°. } Bar. { Begg. 29.828 mer. 45°.5. / Endg. 29.847 — 47°. } = 29.905 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Observed vibra. cor. for Arc. Disappearance.	Observed vibra. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
51	9 22 52	22 56	22 54	1.19	1.145	697	697	86221,760	86221,760	2.143	86223,903	86223,903
	34 29	34 33	34 31	1.10	1.060	696	697	86221,403	86221,760	1.837	86223,240	86223,597
	46 5	46 11	46 8	1.02	0.985	696	697	86221,403	86221,760	1.586	86222,989	86223,346
51,5	57 41	57 49	57 45	0.95	0.915	697	697,5	86221,760	86221,938	1.369	86223,129	86223,307
	10 9 18	9 27	9 22,5	0.88	0.850	698	698	86222,116	86222,116	1.178	86223,294	86223,294
	20 56	21 5	21 00,5	0.82	0.785	698	698	86222,116	86222,116	1.007	86223,123	86223,123
52,5	32 34	32 43	32 38 5	0.75	0.725	697	698	86221,760	86222,116	0.859	86222,619	86222,975
	44 11	44 22	44 16,5	0.70	0.680	697	698	86221,760	86222,116	0.756	86222,516	86222,872
	55 48	56 1	55 54,5	0.66	0.640	698	698,5	86222,116	86222,293	0.670	86222,786	86222,963
51,5	11 7 26	7 40	7 33	0.62								
51,62	Mean.										86223,066	86223,264
								Correction for Temp. 1°.62.			+ 0,685	+ 0,685
1,62	Diff. to 50°.							Vibra. in 24 h. at Temp. 50°.			86223,751	86223,949

Morning, 18th June, 1825, Port Bowen. Hygr. { Temp. 51°. / Dew Pt. 40°. } Bar. { Begg. 29.841 mer. 46°. / Begg. 29.841 — 46°. } = 29.908 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

51	12 55 15	55 19	55 17	1.15	1.110	696	696,5	86221,403	86221,582	2.014	86223,417	86223,596
	1 6 51	6 56	6 53,5	1.07	1.030	696	696,5	86221,403	86221,582	1.735	86223,138	86223,317
	18 27	18 33	18 30	0.99	0.960	696	696,5	86221,403	86221,582	1.507	86222,910	86223,089
52	30 3	30 10	30 6,5	0.93	0.900	697	697	86221,760	86221,760	1.324	86223,084	86223,084
	41 40	41 47	41 43,5	0.87	0.835	698	698	86222,116	86222,116	1.138	86223,254	86223,254
	53 18	53 25	53 21,5	0.80	0.775	696	697	86221,403	86221,760	0.982	86222,385	86222,742
51,5	2 4 54	5 3	4 58,5	0.75	0.725	698	698,5	86222,116	86222,293	0.859	86222,975	86223,152
	16 32	16 42	16 37	0.70	0.675	699	699	86222,470	86222,470	0.745	86223,215	86223,215
	28 11	28 21	28 16	0.65	0.625	696	698	86221,403	86222,116	0.638	86222,041	86222,754
51	40 47	41 01	40 54	0.60								
51,37	Mean.										86222,935	86223,134
								Correction for Temp. 1°.37.			+ 0,579	+ 0,579
1,37	Diff. to 50°.							Vibra. in 24 h. at Temp. 50°.			86223,514	86223,713

Observation of Coincidences at Port Bowen (1st Series)—continued.

Forenoon, 18th June 1825, Port Bowen. Clock gaining at a mean rate 69".88. Hygr. {Temp. 51°.5. Dew Pt. 40°. Barr. {Begg. 29.871 mer. 45° Endg. 29.885 — 47°} = 29.946 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Mean of Disap. Re-ap.	Correct. for Arc.	Observed vibra. cor. for Arc. Disappearance.	Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
51	9 17 48	17 52	17 50	1.17	1.125	696	696	86221,403	86221,403	2.069	86223,472	86223,472
	29 24	29 28	29 26	1 08	1.045	696	696,5	86221,403	86221,582	1.785	86223,188	86223,367
	41 00	41 5	41 2,5	1.01	0.975	698	699	86222,116	86222,470	1.554	86223,670	86224,024
51,2	52 38	52 45	52 41,5	0.94	0.905	699	698,5	86222,470	86222,293	1.339	86223,809	86223,632
	10 4 17	4 23	4 20	0.87	0.845	699	699,5	86222,470	86222,647	1.166	86223,636	86223,813
	15 56	16 3	15 59,5	0.82	0.795	699	699,5	86222,470	86222,647	1.033	86223,503	86223,680
51	27 35	27 43	27 39	0.77	0.745	700	700	86222,823	86222,823	0.907	86223,730	86223,730
	39 15	39 23	39 19	0.72	0.695	697	697,5	86221,760	86221,938	0.788	86222,548	86222,726
	50 52	51 1	50 56,5	0.67	0.645	700	700	86222,823	86222,823	0.680	86223,503	86223,503
51,8	11 2 32	2 41	2 36,5	0.62								
51,25	Mean.										86223,451	86223,550
										Correction for Temp. 1°.25.	+ 0,529	+ 0,529
1,25	Diff. to 50°.									Vibra. in 24 h. at temp. 50°.	86223,980	86224,079

Afternoon, 18th June, 1825, Port Bowen. Clock gaining at a mean rate 69".88. Hygr. {Temp. 52°. Dew Pt. 42°. Bar. {Begg. 29.896 mer. 48° Endg. 29.901 — 48°} = 29.965 mean cor. to temp. of pend.

52,8	1 20 33	20 37	20 35	1.17	1.125	695	695	86221,046	86221,046	2.069	86223,115	86223,115
	32 8	32 12	32 10	1.08	1.040	696	696,5	86221,403	86221,582	1.768	86223,171	86223,350
	43 44	43 49	43 46,5	1.00	0.970	696	697	86221,403	86221,760	1.538	86222,941	86223,298
52,2	55 20	55 27	55 23,5	0.94	0.905	697	697,5	86221,760	86221,938	1.339	86223,099	86223,277
	2 6 57	7 5	7 1	0.87	0.840	698	698	86222,116	86222,116	1.154	86223,270	86223,270
	18 35	18 43	18 39	0.81	0.780	698	698	86222,116	86222,116	0 995	86223,111	86223,111
51,8	30 13	30 21	30 17	0.75	0.725	699	699,5	86222,470	86222,647	0.859	86223,329	86223,506
	41 52	42 1	42 56,5	0.70	0.675	700	700	86222,823	86222,823	0.745	86223,568	86223,568
	53 32	53 41	53 36,5	0.65	0.630	698	699	86222,116	86222,470	0.649	86222,765	86223,119
51,2	3 5 10	5 21	5 15,5	0.61								
52,0	Mean.										86223,152	86223,290
										Correction for Temp. 2°.0.	+ 0,846	+ 0,846
2,0	Diff. to 50°.									Vibra. in 24 h. at Temp. 50°.	86223,998	86224,136

Observation of Coincidences at Port Bowen (1st Series)—continued.

Night, 18th June, 1825, Port Bowen. Hygr. {Temp. 52°. Dew Pt. 40°. Barr. {Begs. 29.900 mer. 46°.5. Ends. 29.898 — 45°. } = 29.964 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance	Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance	Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
51,5	8 59 43	59 47	59 45	1.19	1.145	697	697	86221,760	86221,760	2.143	86223,903	86223,903
	9 11 20	11 24	11 22	1.10	1.060	695	695,5	86221,046	86221,225	1.837	86222,883	86223,062
	22 55	23 00	22 57,5	1.02	0.985	697	698	86221,760	86222,116	1.586	86223,346	86223,702
51,0	34 32	34 39	34 35,5	0.95	0.920	697	697	86221,760	86221,760	1.384	86223,144	86223,144
	46 9	46 16	46 12,5	0.89	0.860	698	698,5	86222,116	86222,293	1.209	86223,325	86223,502
	57 47	57 55	57 51	0.83	0.805	698	698	86222,116	86222,116	1.059	86223,175	86223,175
50,8	10 9 25	9 34	9 29	0.78	0.750	698	699	86222,116	86222,470	0.920	86223,036	86223,390
	21 3	21 13	21 8	0.72	0.690	699	699,5	86222,470	86222,647	0.776	86223,246	86223,423
	32 42	32 53	32 47,5	0.66	0.640	700	699	86222,823	86222,470	0.670	86223,493	86223,140
	44 22	44 31	44 26,5	0.62								
51,15	Mean.										86223,283	86223,382
1,15	Diff. to 50°.							Correction for Temp. 1°.15.			+ 0,487	+ 0,487
								Vibra. in 24 h. at Temp. 50°.			86223,770	86223,869

Morning, 19th June, 1825, Port Bowen. Hygr. {Temp. 51°. Dew Pt. 40°. Barr. {Begs. 29.895 mer. 45.°. Ends. 29.878 — 44°.2. } = 29.956 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

51,0	1 13 59	14 3	14 1	1.18								
50,8	25 34	25 40	25 37	1.09	1.135	695	696	86221,046	86221,403	2.106	86223,152	86223,509
50,4	37 10	37 17	37 13,5	1.02	1.055	696	696,5	86221,403	86221,582	1.820	86223,223	86223,402
50,0	48 48	48 55	48 51,5	0.95	0.985	698	698	86222,116	86222,116	1.586	86223,702	86223,702
51,0	2 00 26	00 33	00 29,5	0.88	0.915	698	698	86222,116	86222,116	1.369	86223,485	8622 3485
52,0	12 3	12 12	12 7,5	0.82	0.850	697	698	86221,760	86222,116	1.178	86222,938	86223,294
52,2	23 40	23 49	23 44,5	0.77	0.795	697	697	86221,760	86221,760	1.033	86222,793	86222,793
51,5	35 17	35 27	35 22	0.72	0.745	697	697,5	86221,760	86221,938	0.907	86222,667	86222,845
51,4	46 55	47 6	47 00,5	0.67	0.695	698	698,5	86222,116	86222,293	0.788	86222,904	86223,081
51,1	58 34	58 45	58 39,5	0.62	0.645	699	699	86222,470	86222,470	0.680	86223,150	86223,150
51,14	Mean.										86223,113	86223,251
1,14	Diff. to 50°.							Correction for Temp. 1.°14.			+ 0,482	+ 0,482
								Vibra. in 24 h. at Temp. 50°.			86223,595	86223,733

Observation of Coincidences at Port Bowen (1st Series)—continued.

Forenoon, June 19th, 1825, Port Bowen. Hygr. {Temp. 52°.5. Dew Pt. 42°.} Barr. {Begs. 29.823 mer. 47°. Ends. 29.800 — 48°.} = 29.877 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Disap. & Re-ap.	Observed vibra. in 24 h. by Disappear.	Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappear.	Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
52,5	9 16 50	16 54	16 52	1.18	1.140	695	695,5	86221,046	86221,225	2,125	86223,171	86223,350
	28 25	28 30	28 27,5	1.10	1.060	695	695,5	86221,046	86221,225	1,837	86222,883	86223,062
	40 00	40 6	40 3	1.02	0.985	697	697	86221,760	86221,760	1,586	86223,346	86223,346
52,0	51 37	51 43	51 40	0.95	0.920	697	697,5	86221,760	86221,938	1,384	86223,144	86223,322
	10 3 14	3 21	3 17,5	0.89	0.860	697	697,5	86221,760	86221,938	1,209	86222,969	86223,147
	14 51	14 59	14 55	0.83	0.800	697	697,5	86221,760	86221,938	1,046	86222,806	86222,984
51,8	26 28	26 37	26 32,5	0.77	0.745	696	698	86221,403	86222,116	0,907	86222,310	86223,023
	38 4	38 17	38 10,5	0.72	0.690	704	702	86224,227	86223,527	0,776	86225,003	86224,303
	49 48	49 57	49 52,5	0.66	0.635	698	699	86222,116	86222,470	0,659	86222,775	86223,129
	11 1 26	1 37	1 31,5	0.61								
51,87	Mean.										86223,156	86223,296
1,87	Diff. to 50°.							Correction for Temp. 1°.87.			+ 0,790	+ 0,790
								Vibra. in 24 h. at Temp. 50°.			86223,946	86224,086

Afternoon, 19th June, 1825, Port Bowen. Hygr. {Temp. 52°.5. Dew Pt. 42°.} Barr. {Begs. 29.784 mer. 48°. Ends. 29.770 — 48.2°.} = 29.842 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

52,5	1 24 31	24 35	24 33	1.10	1.055	695	696	86221,046	86221,403	1.820	86222,866	86223,223
	36 6	36 12	36 9	1.01	0.970	697	697,5	86221,760	86221,938	1.538	86223,298	86223,476
	47 43	47 50	47 46,5	0.93	0.890	698	697,5	86222,116	86221,938	1.295	86223,411	86223,233
52,2	59 21	59 27	59 24	0.85	0.825	697	697,5	86221,760	86221,938	1.110	86222,870	86223,048
	2 10 58	11 5	11 1,5	0.80	0.775	698	698	86222,116	86222,116	0.982	86223,098	86223,098
	22 36	22 43	22 39,5	0.75	0.725	698	699	86222,116	86222,470	0.859	86222,975	86223,329
51,8	34 14	34 23	34 18,5	0.70	0.675	698	699	86222,116	86222,470	0.745	86222,861	86223,215
	45 52	46 3	45 57,5	0.65	0.630	700	699	86222,823	86222,470	0.649	86223,472	86223,119
	57 32	57 41	57 36,5	0.61	0.590	700	700	86222,823	86222,823	0.569	86223,392	86223,392
52,0	3 9 12	9 21	9 16,5	0.57								
52,12	Mean.										86223,138	86223,237
2,12	Diff. to 50°.							Correction for Temp. 2°.12.			+ 0,897	+ 0,897
								Vibra. in 24 h. at Temp. 50°.			86224,035	86224,134

Observation of Coincidences at Port Bowen (1st Series)—continued.

Night, 19th June 1825, Port Bowen. Clock gaining at a mean rate 69ˢ.88. Hygʳ. {Temp. 52°.5. Dew Pᵗ. 42°. Barʳ {Begᵍ. 29.759 mer. 47°. Endᵍ. 29.750 — 46°.8. } = 29.819 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-app. pearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
52,5	9 32 16	32 19	32 17,5	1.16	1.120	695	695,5	86221,046	86221,225	2.051	86223,097	86223,276
	43 51	43 55	43 53	1.08	1.040	694	695	86220,687	86221,046	1.768	86222,455	86222,814
	55 25	55 31	55 28	1.00	0.970	696	696,5	86221,403	86221,582	1.538	86222,941	86223,120
52,0	10 7 1	7 8	7 4,5	0 94	0.910	697	697	86221,760	86221,760	1.354	86223,114	86223,114
	18 38	18 45	18 41,5	0 88	0.850	697	697,5	86221,760	86221,938	1.178	86222,938	86223,116
	30 15	30 23	30 19	0.82	0.790	697	698	86221,760	86222,116	1.020	86222,780	86223,136
52,0	41 52	42 2	41 57	0 76	0.735	698	698,5	86222,116	86222,293	0.883	86222,999	86223,176
	53 30	53 41	53 35,5	0.71	0.685	699	698,5	86222,470	86222,293	0.766	86223,236	86223,059
	11 5 9	5 19	5 14	0.66	0.640	699	699,5	86222,470	86222,647	0.670	86223,140	86223,317
51,8	16 48	16 59	16 53,5	0.62								
52,07	Mean.										86222,967	86223,125
2,07	Diff. to 50°.							Correction for Temp. 2°.07.			+ 0,875	+ 0,875
								Vibra. in 24 h. at Temp. 50°.			86223,842	86224,000

Morning, 20th June 1825, Port Bowen. Clock gaining at a mean rate 69ˢ.88. Hygʳ. {Temp. 52°. Dew Pᵗ. 42°. Barʳ. {Begᵍ. 29.749 mer. 46°. Endᵍ. 29.743 — 46°. } = 29.813 mean cor. to temp. of pend.

52,5	0 55 4	55 9	55 6,5	1.12	1.080	696	696	86221,403	86221,403	1.907	86223,310	86223,310
	1 6 40	6 45	6 42,5	1.04	0 995	696	696,5	86221,403	86221,582	1.618	86223,021	86223,200
	18 16	18 22	18 19	0.95	0.915	696	697	86221,403	86221,760	1.369	86222,772	86223,129
51,8	29 52	30 00	29 56	0.88	0.855	697	697	86221,760	86221,760	1.193	86222,953	86222,953
	41 29	41 37	41 33	0.83	0.805	697	697	86221,760	86221,760	1.059	86222,819	86222,819
	53 6	53 14	53 10	0.78	0.755	699	699	86222,470	86222,470	0.932	86223,402	86223,402
51,6	2 4 45	4 53	4 49	0.73	0.705	698	698,5	86222,116	86222,293	0.812	86222,928	86223,105
	16 23	16 32	16 27,5	0.68	0.655	697	700,5	86221,760	86223,000	0.701	86222,461	86223,701
	28 00	28 16	28 8	0.63	0.610	699	699,5	86222,470	86222,647	0.608	86223,078	86223,255
	39 39	39 56	39 47,5	0.59								
51,77	Mean.										86222,972	86223,208
1.77	Diff. to 50°.							Correction for Temp. 1°.77.			+ 0,748	+ 0,748
								Vibra. in 24 h. at Temp. 50°.			86223,720	86223,956

Observation of Coincidences at Port Bowen (1st Series)— continued.

Forenoon, 20th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 50°.5. Dew Pt. 41°. } Barr. { Begs. 29.746 mer. 46°. Ends. 29.750 — 47°. } = 29°.813 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibra. in 24 h. by Disappearanee.	Observed vibra. in 24 h. by Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o -	s.	s.			vib.		
51	9 27 45	27 48	27 46,5	1.17	1.125	695	696	86221,046	86221,403	2.069	86223,115	86223,472
	39 20	39 25	39 22,5	1.08	1.040	698	698	86222,116	86222,116	1.768	86223,884	86223,884
	50 58	51 3	51 0,5	1.00	0.965	698	698,5	86222,116	86222,293	1.522	86223,638	86223,815
50,8	10 2 36	2 42	2 39	0.93	0.895	698	698,5	86222,116	86222,293	1.309	86223,425	86223,602
	14 14	14 21	14 17,5	0.86	0.835	699	699,5	86222,470	86222,647	1.138	86223,608	86223,785
	25 53	26 1	26 57	0.81	0.785	700	700	86222,823	86222,823	1.007	86223,830	86223,830
50,3	37 33	37 41	37 37	0.76	0.730	701	700,5	86223,176	86223,000	0.871	86224,047	86223,871
	49 14	49 21	49 17,5	0.70	0.675	698	699,5	86222,116	86222,647	0.745	86222,861	86223,392
	11 00 52	1 2	00 57	0.65	0.630	701	700	86223,176	86222,823	0.649	86223,825	86223,472
51,2	12 33	12 41	12 37	0.61								
50,82	Mean.										86223,581	86223,680
0,82	Diff. to 50°.								Correction for Temp. 0°.82.		+ 0,347	+ 0,347
									Vibra. in 24 h. at Temp. 50°.		86223,928	86224,027

Afternoon, 20th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 51°. Dew Pt. 36°. } Barr. { Begs. 29.760 mer. 47°. Ends. 29.752 — 47°. } = 29.819 mean cor. to temp. of pend.

50,8	1 32 54	32 57	32 55,5	1.15	1.105	697	697,5	86221,760	86221,938	1.996	86223,756	86223,934
	43 31	43 35	43 33	1.06	1.020	697	697,5	86221,760	86221,938	1.701	86223,461	86223,639
	55 8	55 13	55 10,5	0.98	0.950	698	698	86222,116	86222,116	1.476	86223,592	86223,592
50,2	2 6 46	6 51	6 48,5	0.92	0.895	698	699,5	86222,116	86222,647	1.309	86223,425	86223,956
	18 24	18 32	18 28	0.87	0.840	699	699	86222,470	86222,470	1.154	86223,624	86223,624
	30 3	30 11	30 7	0.81	0.780	699	699,5	86222,470	86222,647	0.995	86223,465	86223,642
50,1	41 42	41 51	41 46,5	0.75	0.725	700	700	86222,823	86222,823	0.859	86223,682	86223,682
	53 22	53 31	53 26,5	0.70	0.680	702	702	86223,527	86223,527	0.756	86224,283	86224,283
	3 5 4	5 13	5 8,5	0.66	0.635	700	699,5	86222,823	86222,647	0.659	86223,482	86223,306
50,1	16 44	16 52	16 48	0.61								
50,3	Mean.										86223,641	86223,740
0,3	Diff. to 50°.								Correction for Temp. 0°.3.		+ 0,127	+ 0,127
									Vibra. in 24 h. at Temp. 50°.		86223,768	86223,867

Observation of Coincidences at Port Bowen (1st Series)—continued.

Night, 20th June, 1825, Port Bowen.
Clock gaining 69s.88 at a mean rate.

Hygr. { Temp. 50°. Dew Pt. 35°. Bar. { Begs. 29.753 mer. 45° Ends. 29.750 — 48° } = 29.820 mean cor. to temp. of pend.

Temp.	Time of Disappearance	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibrat. in 24 h. cor. for Arc. Disappearance.	Vibrat. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
49,5	9 48 50	48 54	48 52	1.15	1.115	696	697	86221,403	86221,760	2.032	86223,435	86223,792
50,0	10 00 26	00 32	00 29	1.08	1.040	695	696	86221,046	86221,403	1.768	86222,814	86223,171
51,5	12 1	12 9	12 5	1.00	0.965	694	694	86220,687	86220,687	1.522	86222,209	86222,209
55,0	23 35	23 43	23 39	0.93	0.900	694	693,5	86220,687	86220,508	1.324	86222,011	86221,832
55,5	35 9	35 16	35 12,5	0.87	0.840	692	693	86219,967	86220,328	1.154	86221,121	86221,482
57,8	46 41	46 50	46 45,5	0.81	0.780	692	691,5	86219,967	86219,786	0,995	86220,962	86220,781
57,0	58 13	58 21	58 17	0.75	0.725	692	692,5	86219,967	86220,148	0.859	86220,826	86221,007
56,0	11 9 45	9 54	9 49,5	0.70	0.675	694	695	86220,687	86221,046	0.745	86221,432	86221,791
56,0	21 19	21 30	21 24,5	0.65	0.630	694	694	86220,687	86220,687	0.649	86221,336	86221,336
55,2	32 53	33 4	32 58,5	0.61								
54,35	Mean.										86221,794	86221,933
4,35	Diff. to 50°.									Correction for Temp. 4°.35.	+ 1,840	+ 1,840
										Vibra. in 24 h. at Temp. 50°.	86223,634	86223,773

Forenoon, 21st June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.

Hygr. { Temp, 49°.5. Dew Pt. 36° Barr. { Begs. 29.700 mer. 47°. Ends. 29.709 — 47°. } = 29,766 mean cor. to temp. of pend.

49,8	9 34 13	34 19	34 16	1.12	1.080	700	699,5	86222,823	86222,647	1.907	86224,730	86224,554
48,5	45 53	45 58	45 55,5	1.04	1.005	698	699	86222,116	86222,470	1.650	86223,766	86224.120
49,0	57 31	57 38	57 34,5	0.97	0.940	700	699,5	86222,823	86222,647	1.445	86224,268	86224,092
49,5	10 9 11	9 17	9 14	0.91	0.880	699	699	86222,470	86222,470	1.266	86223,736	86223,736
50,8	20 50	20 56	20 53	0.85	0.820	698	698,5	86222,116	86222,293	1.099	86223,215	86223,392
50,8	32 28	32 35	32 31,5	0.79	0.760	699	699,5	86222,470	86222,647	0,944	86223,414	86223,691
50,8	44 7	44 15	44 11	0.73	0.705	700	700,5	86222,823	86223,000	0.812	86223,635	86223,812
50,6	55 47	55 56	15 51,5	0.68	0.660	700	700	86222,823	86222,823	0 712	86223,535	86223,535
50,5	11 7 27	7 36	7 31,5	0.64	0.620	700	700	86222,823	86222,823	0.628	86223,451	86223,451
50,3	19 7	19 16	19 11,5	0.60								
50,06	Mean.										86223,750	86223,820
0,06	Diff. to 50°.									Correction for Temp, 0°.06.	+ 0,025	+ 0,025
										Vibra. in 24 h. at Temp. 50°.	86223,775	86223,845

Observation of Coincidences at Port Bowen (1st Series)—continued.

Afternoon, 21st June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.

Hygr. { Temp. 50°. / Dew Pt. 36°. } Barr. { Begs. 29.709 mer. 46°. / Ends. 29.700 — 45°. } = 29,767 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
51	1 31 23	31 27	31 25	1.15	1.110	691	691,5	86219,606	86219,786	2.014	86221,620	86221,800
	42 54	42 59	42 56,5	1.07	1.030	699	698,5	86222,470	86222,293	1.735	86224,205	86224,028
	54 33	54 37	54 35	0.99	0.945	704	704,5	86224,227	86224,402	1.460	86225,687	86225,862
49,5	2 6 17	6 22	6 19,5	0.90	0.870	698	699	86222,116	86222,470	1.237	86223,353	86223,707
	17 55	18 2	17 58,5	0.84	0.815	700	700	86222,823	86222,823	1.086	86223,909	86223,909
	29 35	29 42	29 38,5	0.79	0.760	700	700,5	86222,823	86223,000	0.944	86223,767	86223,944
49,5	41 15	41 23	41 19	0.73	0.705	700	700,5	86222,823	86223,000	0.812	86223,635	86223,812
	52 55	53 4	52 59,5	0.68	0.655	701	701,5	86223,176	86223,352	0.701	86223,877	86224,053
	3 4 36	4 46	4 41	0.63	0.610	701	701,5	86223,176	86223,352	0.608	86223,784	86223,960
49,0	16 17	16 28	16 22,5	0.59								
49,75	Mean.										86223,759	86223,897
0,25	Diff. to 50°.									Correction for Temp. 0°.25.	— 0,106	— 0,106
										Vibra. in 24 h. at Temp. 50°.	86223,653	86223,791

Night, 21st June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.

Hygr. { Temp. 52°. / Dew Pt. 36°. } Barr. { Begs. 29.678 mer. 45°. / Ends. 29.671 — 46°. } = 29.739 mean cor. to temp. of pend.

53,5	9 17 54	17 58	17 56	1.15	1.110	693	693,5	86220,328	86220,508	2.014	86222,342	86222,522
53,2	29 27	29 32	29 29,5	1.07	1.030	696	697	86221,403	86221,760	1.735	86223,138	86223,495
53,0	41 3	41 10	41 6,5	0.99	0.955	695	695,5	86221,046	86221,225	1.491	86222,537	86222,716
52,5	52 38	52 46	52 42	0.92	0.890	697	697	86221,760	86221,760	1.295	86223,055	86223,055
52,0	10 4 15	4 23	4 19	0.86	0.830	698	698,5	86222,116	86222,293	1.122	86223,238	86223,415
50,0	15 53	16 2	15 57,5	0.80	0.770	700	699,5	86222,823	86222,647	0 969	86223,792	86223,616
49,5	27 33	27 41	27 37	0.74	0.710	698	699,5	86222,116	86222,647	0.824	86222,940	86223,471
51,5	39 11	39 22	39 16,5	0.68	0.655	699	699,5	86222,470	86222,647	0.701	86223,171	86223,348
52,0	50 50	51 2	50 56	0.63	0.610	698	700	86222,116	86222,823	0.608	86222,724	86223,431
53,0	11 2 28	2 42	2 36	0.59								
52,02	Mean.										86222,993	86223,230
2,02	Diff. to 50°.									Correction for Temp. 2°.02.	+ 0,854	+ 0,854
										Vibra. in 24 h. at Temp. 50°.	86223,847	86224,084

Observation of Coincidences at Port Bowen (1st Series)—continued.

Morning, 22d June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 50°. / Dew Pt. 36°. } Barr. { Begg. 29.672 mer. 45°.5. / Endg. 29.671½ — 46°. } = 29.735 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. cor. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Mean of Disap. and Re-ap.		Disappearance.	Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
50	0 49 43	49 48	49 45,5	1.12	1.080	697	697,5	86221,760	86221,938	1.907	86223,667	86223,845
	1 1 20	1 26	1 23	1.04	1.005	698	699	86222,116	86222,470	1.650	86223,766	86224,120
	12 58	13 6	13 2	0.97	0.935	696	697	86221,403	86221,760	1.429	86222,832	86223,189
50,5	24 34	24 44	24 39	0.90	0.870	699	699,5	86222,470	86222,647	1.237	86223,707	86223,884
	36 13	36 24	36 18,5	0.84	0.810	700	700	86222,823	86222,823	1.073	86223,896	86223,896
	47 53	48 4	47 58,5	0.78	0.755	698	699	86222,116	86222,470	0 932	86223,048	86223,402
50,8	59 31	55 44	59 37,5	0.73	0.705	702	701	86223,527	86223,176	0.812	86224,339	86223,988
	2 11 13	11 24	11 18,5	0.68	0.660	698	698,5	86222,116	86222,293	0.712	86222,828	86223,005
50,0	22 51	23 3	22 57	0.64	0.620	699	699,5	86222,470	86222,647	0.628	86223,098	86223,275
51,5	34 30	34 43	34 36,5	0.60								
50,56	Mean.										86223,465	86223,623
0,56	Diff. to 50°.								Correction for Temp. 0°.56.		+ 0,237	+ 0,237
									Vibra. in 24 h. at Temp. 50°.		86223,702	86223,860

Forenoon, 22d June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 50°. / Dew Pt, 42°. } Barr. { Begg. 29.700 mer. 45°. / Endg. 29.693 — 44°. } = 29.759 mean cor. to temp. of pend.

50,2	9 31 13	31 18	31 15,5	1.10	1 060	699	698,5	86222,470	86222,293	1.837	86224,307	86224,130
	42 52	42 56	42 54	1.02	0.985	695	696,5	86221,046	86221,582	1.586	86222,632	86223,168
	54 27	54 34	54 30,5	0.95	0.920	700	700	86222,823	88223,823	1.384	86224,207	86224,207
48,5	10 6 7	6 14	6 10,5	0.89	0.860	701	701	86223,176	86223,176	1.209	86224,385	86224,385
	17 48	17 55	17 51,5	0.83	0.800	701	701	86223,176	86223,176	1.046	86224,222	86224,222
	29 29	29 36	29 32,5	0.77	0.745	695	695	86221,046	86221,046	0 907	86221,953	86221,953
48,2	41 4	41 11	41 7,5	0.72	0.695	707	708	86225,269	86225,615	0.788	86226,057	86226,403
	52 51	53 00	52 55,5	0 67	0.645	701	702	86223,176	86223,527	0.680	86223,856	86224,207
	11 4 32	4 43	4 37,5	0.62	0.600	701	700,5	86223,176	86223,000	0.589	86223,765	86223,589
48,2	16 13	16 23	16 18	0.58								
48,77	Mean.										86223,931	86224,029
1,23	Diff. to 50°.								Correction for Temp. 1°.23.		—0,519	—0,519
									Vibra. in 24 h. at Temp. 50°.		86223,412	86223,510

Observation of Coincidences at Port Bowen (1st Series)—continued.

Afternoon, 22nd June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. {Temp. 49°.5. Dew Pt. 38°.} Barr. {Begs. 29.693 mer. 46°. Ends. 29.693 — 44°.5.} = 29.755 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
49,8	1 10 51	10 54	10 52,5	1.18	1.140	697	698,5	86221,760	86222,293	2.125	86223,885	86224,418
	22 28	22 34	22 31	1.10	1.060	698	697,5	86222,116	86221,938	1.837	86223,953	86223,775
	34 6	34 11	34 8,5	1.02	0.990	700	700,5	86222,823	86223,000	1.602	86224,425	86224,602
48,6	45 46	45 52	45 49	0.96	0.930	699	699,5	86222,470	86222,647	1.414	86223,884	86224,061
	57 25	57 32	57 28,5	0.90	0.865	701	701,5	86223,176	86223,352	1.223	86224,399	86224,575
	2 9 6	9 14	9 10	0.83	0.800	701	700,5	86223,176	86223,000	1.046	86224,222	86224,046
48,2	20 47	20 54	20 50,5	0.77	0.745	700	702	86222,823	86223,527	0.907	86223,730	86224,434
	32 27	32 38	32 32,5	0.72	0.690	703	702,5	86223,878	86223,703	0.776	86224,654	86224,479
	44 10	44 20	44 15	0.66	0.640	702	703	86223,527	86223,878	0.670	86224,197	86224,548
46,5	55 52	56 4	55 58	0.62								
48,27	Mean.										86224,150	86224,326
1,73	Diff. to 50°.							Correction for Temp. 1°.73.			—0,732	—0,732
								Vibra. in 24 h. at Temp. 50°.			86223,418	86223,594

Night, 22nd June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. {Temp. 49°. Dew Pt. 38°.} Barr. {Begs. 29.692 mer. 45°. Ends. 29.691 — 45°.5.} = 29.755 mean cor. to temp. of pend.

49	9 6 9	6 12	6 10,5	1.18	1.135	698	698,5	86222,116	86222,293	2.106	86224,222	86224,399
	17 47	17 51	17 49	1.09	1.045	698	699,5	86222,116	86222,647	1.785	86223,901	86224,432
	29 25	29 32	29 28,5	1.00	0.965	700	700	86222,823	86222,823	1.522	86224,345	86224,345
49,2	41 5	41 12	41 8,5	0.93	0.895	699	699,5	86222,470	86222,647	1.309	86223,779	86223,956
	52 44	52 52	52 48	0.86	0.835	700	699,5	86222,823	86222,647	1.138	86223,961	86223,785
	10 4 24	4 31	4 27,5	0.81	0.780	698	698	86222,116	86222,116	0.995	86223,111	86223,111
50,2	16 2	16 9	16 5,5	0.75	0.725	699	701	86222,470	86223,176	0.859	88223,329	86224,035
	27 41	27 52	27 46,5	0.70	0.675	701	701	86223,176	86223,176	0.745	86223,921	86223,921
	39 22	39 33	39 27,5	0.65	0.630	700	701	86222,823	86223,176	0.649	86223,472	86223,825
50	51 2	51 15	51 8,5	0.61								
49,6	Mean.										86223,782	86223,979
0,4	Diff. to 50°.							Correction for Temp. 0°.4.			—0,169	—0,169
								Vibra. in 24 h. at Temp. 50°.			86223,613	86223,810

Observation of Coincidences at Port Bowen (1st Series)—continued.

Morning, June 23rd, 1825, Port Bowen.
Clock gaining at a mean rate 69".88.

Hygr. { Temp. 49°. / Dew Pt. 38°. } Barr. { Begg. 29.686 mer. 45° / Ends. 29.686 — 45° } = 29.749 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Reapp.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-app.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-app.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
48,9	1 7 35	7 40	7 37,5	1.15	1.110	698	699	86222,116	86222,470	2.014	86224,130	86224,484
46,0	19 13	19 20	19 16,5	1.07	1.030	700	700	86222,823	86222,823	1.735	86224,558	86224,558
46,0	30 53	31 00	30 56,5	0.99	0.965	703	702,5	86223,878	86223,703	1.522	86225,400	86225,225
48,2	42 36	42 42	42 39	0.94	0.910	699	699,5	86222,470	86222,647	1.354	86223,824	86224,001
49,5	54 15	54 22	54 18,5	0.88	0.850	698	699	86222,116	86222,470	1.178	86223,294	86223,648
50,0	2 5 53	6 2	5 57,5	0.82	0.785	700	700	86222,823	86222,823	1.007	86223,830	86223,830
49,8	17 33	17 42	17 37,5	0.75	0.725	699	700,5	86222,470	86223,000	0.859	86223,329	86223'859
50,0	29 12	29 24	29 18	0.70	0.675	699	698,5	86222,470	86222,293	0.745	86223,215	86223,038
50,0	40 51	41 2	40 56,5	0.65	0.630	700	700,5	86222,823	86223,000	0.649	86223,472	86223,649
50,2	52 31	52 43	52 37	0.61								
48,86	Mean.										86223,895	86224,032
1,14	Diff. to 50°.							Correction for Temp. 1°.14.			—0,482	—0,482
								Vibrations in 24 h. at Temp. 50°.			86223,413	86223,550

Forenoon, 23rd June, 1825, Port Bowen.
Clock gaining at a mean rate 69".88.

Hygr. { Temp. 50°. / Dew Pt. 37°. } Barr. { Begg. 29.700 mer. 45° / End. 29.709 — 45°.5 } = 29.767 mean cor. to temp. of pend.

49,5	9 18 41	18 44	18 42,5	1.18	1.135	697	698,5	86221,760	86222,293	2.106	86223,866	86224,399
49,0	30 18	30 24	30 21	1.09	1.050	699	698,5	86222,470	86222,293	1.803	86224,273	86224,096
48,2	41 57	42 2	41 59,5	1.01	0.975	699	700,5	86222,470	86223,000	1.554	86224,024	86224,554
48,5	53 36	53 44	53 40	0.94	0.910	701	700,5	86223,176	86223,000	1.354	86224,530	86224,354
48,8	10 5 17	5 24	5 20,5	0.88	0.850	700	700	86222,823	86222,823	1.178	86224,001	86224,001
49,0	16 57	17 4	17 00,5	0.82	0.790	700	700,5	86222,823	86223,000	1.020	86223,843	86224,020
49,0	28 37	28 45	28 41	0.76	0.735	700	701	86222,823	86223,176	0.883	86223,706	86224,059
48,8	40 17	40 27	40 22	0.71	0.685	702	702,5	86223,527	86223,703	0.766	86224,293	86224,469
48,8	51 59	52 10	52 4,5	0.66	0.640	703	702,5	86223,878	86223,703	0.670	86224,548	86224,373
48,9	11 3 42	3 52	3 47	0.62								
48,85	Mean.										86224,120	86224,258
1,15	Diff. to 50°.							Correction for Temp. 1°.15.			—0,486	—0,486
								Vibrations in 24 h. at Temp. 50°.			86223,634	86223,772

Table I. (*First Series.*)

Time by the Clock of Transits of Stars at Port Bowen, Prince Regent's Inlet, June 1825.

Stars.	14th.	16th.	18th.	19th.	20th.	22d.	23d.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
Arcturus	.....	.....	.....	8 8 27,51	8 5 41,67	8 0 9,52	7 57 23,66
Arcturus 2d & 3d wires	.....	8 16 33,03	.....	8 8 13,71	8 5 27,95	7 59 55,92	7 57 9,94
Arcturus 3d wire	8 22 19,38	8 16 46,79	.....	8 8 27,22	8 5 41,46	8 00 9,56	7 57 23,70
Arcturus 3d, 4th, 5th w.	8 22 46,90	.....	.....	8 8 54,91	8 6 8,98	8 00 36,91	7 57 51,05
Arcturus 5th wire	8 23 14,42	.....	8 12 8,93	8 9 22,26	8 6 36,5	8 1 4,35	7 58 18,24
α Lyræ	12 45 9,33	.....	12 34 4,02	12 31 17,73	12 28 31,32	12 22 59,16	12 22 59,16

Table II.

Transits of the Sun.

Time by Clock at the moment of Mean Noon.

15th.	17th.	18th.	19th.	21st.	22d.	23d.
h. m s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
11 47 41,29	11 50 00,78	11 51 10,52	11 52 20,07	11 54 39,86	11 55 49,45	11 56 59,66

From these two Tables, which are formed from the Transit Table, the following rates for the clock, contained in Tables III. and IV. have been computed.

Those in Table III. by dividing the difference between the times of transit of each star, on the successive days as given in Table I. by the interval in days, substracting the quotient from $3^m\ 55^s.91$, the acceleration in one day, and applying a correction to the remainder, for the change in $\mathfrak{R}$ of each star during the interval of their respective successive transits, to obtain the rate in a sidereal day.

Those in Table IV. by comparing the time by the clock at the moment of mean noon of each day, as shown in Table II. with that on each succeeding day, and dividing the difference by the number of days in the interval, by which the rate in a mean solar day for 21 separate intervals has been obtained.

Table III.

Rate of the Clock by the Stars. (Gaining.)

June 1825. Stars.	From 14 to 16	From 14 to 18	From 14 to 19	From 14 to 20	From 14 to 22	From 14 to 23	From 16 to 19	From 16 to 20	From 16 to 22	From 16 to 23	From 18 to 19	From 18 to 20	From 18 to 22	From 18 to 23	From 19 to 20	From 19 to 22	From 19 to 23	From 20 to 22	From 20 to 23	From 22 to 23
	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
Arcturus	—	—	—	—	—	—	—	—	—	—	—	—	—	—	70,08	69,92	69,96	69,85	69,92	70,06
Arcturus 2d & 3d	—	—	—	—	—	—	69 48	69,65	69,74	69,76	—	—	—	—	—	—	—	—	—	—
—— 3d wire .	69,63	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—— 3, 4, 5 w.	—	—	69,52	69,60	69,67	69,72	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—— 5 wire ..	—	69,55	—	—	—	—	—	—	—	—	69,25	69,71	69,78	69,78	—	—	—	—	—	—
α Lyræ	—	69,57	69,58	69,57	69,63	69,67	—	—	—	—	69,61	69,55	69,69	69,75	69,49	69,38	69,78	69,82	69,88	70,01
Mean	69,63	69,57	69,56	69,58	69,65	69,69	69,48	69,65	69,74	69,76	69,54	69,58	69,71	69,76	69,78	69,65	69,87	69,83	69,90	70,03
Proportion for rate in $3^m\ 56^s$.	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19	+ 0,19
Rate in a mean solar day...	69,82	69,76	69,75	69,77	69,84	69,88	69,67	69,84	69,93	69,95	69,73	69,77	69,90	69,95	69,97	69,84	70,06	70,02	70,09	70,22

Table IV.

Rate of the Clock by the Sun. (Gaining.)

From 15 to 17	From 15 to 18	From 15 to 19	From 15 to 21	From 15 to 22	From 15 to 23	From 17 to 18	From 17 to 19	From 17 to 21	From 17 to 22	From 17 to 23	From 18 to 19	From 18 to 21	From 18 to 22	From 18 to 23	From 19 to 21	From 19 to 22	From 19 to 23	From 21 to 22	From 21 to 23	From 22 to 23
s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
69,74	69,74	69,69	69,76	69,74	69,80	69,74	69,64	69,77	69,73	69,81	69,55	69,78	69,73	69,83	69,89	69,79	69,90	69,59	69,90	70,21

Table V. (*1st Series.*)

Vibrations of the Pendulum at Port Bowen, computed at the mean rate of the Clock, viz. 86469,88 vibrations in a mean solar day.

Date.	Time of the Day.	Barometer.	Therm.	Vibrations in 24 h. at temp. 50o.	
				Disappearance.	Mean of Disap. & Re-appearance.
		Inches.	o		
June 14th	Night	29,918	50.83	86223,637	86223,837
15	Morning ...	29,922	48.87	86223,702	86223,840
——	Forenoon...	,906	49.05	86223,886	86224,004
——	Afternoon ..	,857	46.50	86223,612	86223,690
——	Night	,835	46.53	86223,637	86223,812
16	Morning ...	29,836	47.80	86223,430	86223,548
——	Forenoon...	,843	49.28	86224,541	86224,658
——	Afternoon ..	,868	49.98	86223,729	86223,886
——	Night	,859	49.10	86223,556	86223,714
17	Morning ...	29,859	46.00	86223,374	86223,491
——	Forenoon...	,864	50.45	86223,996	86224,114
——	Afternoon ..	,882	52.25	86223,991	86224,130
——	Night	,905	51.62	86223,751	86223,949
18	Morning ...	29,908	51.37	86223,514	86223,713
——	Forenoon...	,946	51.25	86223,980	86224,079
——	Afternoon ..	,965	52.00	86223,998	86224,136
——	Night	,964	51.15	86223,770	86223,869
19	Morning ...	29,956	51.14	86223,595	86223,733
——	Forenoon...	,877	51.87	86223,946	86224,086
——	Afternoon ..	,842	52.12	86224,035	86224,134
——	Night	,819	52.07	86223,842	86224,000
20	Morning ...	29,813	51.77	86223,720	86223,956
——	Forenoon...	,813	50.82	86223,928	86224,027
——	Afternoon ..	,819	50.30	86223,768	86223,867
——	Night	,820	54.35	86223,634	86223,773
21	Forenoon...	29,766	50.06	86223,775	86223,845
——	Afternoon ..	,767	49.75	86223,653	86223,791
——	Night	,739	52.02	86223,847	86224,084
22	Morning ...	29,735	50.56	86223,702	86223,860
——	Forenoon...	,759	48.77	86223,412	86223,510
——	Afternoon ..	,755	48.27	86223,418	86223,594
——	Night	,755	49.60	86223,613	86223,810
23	Morning ...	29,749	48.86	86223,413	86223,550
——	Forenoon...	,767	48.85	86223,634	86223,772
	Mean.	29,844	50.15	86223,736	86223,878

Table VI.

By the Stars.

June, 1825.		Computed vibrations of the pendulum in 24 h. the clock gaining 69s.88 at a mean rate in a mean solar day.		Observed rate of the clock by Stars' Transits.	Corr. to vibrations for diff. of rate and 69s.88.	Correct number of vibrations made by the pendulum in a mean solar day at temp. 50°.		No. of stars observed.	Interval in days.	Factors.
From	To	Disappearance.	Mean of Dis. and Re-app.			Disappearance.	Mean of Dis. and Re-app.			
				s.	vib.					
14th Night	16th Night	86223,748	86223,888	69.82	— 0,06	86223,688	86223,828	0,25	2	0,5
—	18th —	86223,771	86223,910	69.76	— 0,12	86223,651	86223,790	1,25	4	5,0
—	19th —	86223,787	86223,925	69.75	— 0 13	86223,657	86223,795	1,75	5	8,75
—	20th —	86223,783	86223,922	69.77	— 0,11	86223,673	86223,812	1,75	6	10,5
—	22nd —	86223,750	86223,892	69.84	— 0,04	86223,710	86223,852	1,75	8	14,0
—	23rd —	86223,736	86223,878	69.88	—	86223,736	86223,878	1,75	9	15,75
16th Night	19th Night	86223,796	86223,934	69.67	— 0,21	86223,586	86223,724	1,50	3	4,5
—	20th —	86223,788	86223,928	69.84	— 0,04	89223,748	86223,888	1,50	4	6,0
—	22nd —	86223,742	86223,886	69.93	+ 0,05	86223,792	86223,936	1,50	6	9,0
—	23rd —	86223,726	86223,869	69.95	+ 0,07	86223,796	86223,939	1,50	7	10,5
18th Night	19th Night	86223,838	86223,964	69.73	— 0,15	86223,688	86223,814	1,25	1	1,25
—	20th —	86223,804	86223,938	69.77	— 0,11	86223,694	86223,828	1,25	2	2,5
—	22nd —	86223,728	86223,871	69.90	+ 0,02	86223,748	86223,891	1,25	4	5,0
—	23rd —	86223,706	86223,848	69.95	+ 0,07	86223,776	86223,918	1,25	5	6,25
19th Night	20th Night	86223,778	86223,925	69.97	+ 0,09	86223,868	86224,015	2,0	1	2,0
—	22nd —	86223,693	86223,843	69 84	— 0,04	86223,653	86223,803	2,0	3	6,0
—	23rd —	86223,668	86223,817	70.06	+ 0,18	86223,848	86223,997	2,0	4	8,0
20th Night	22nd Night	86223,679	86223,829	70.02	+ 0,14	86223,819	86223,969	2,0	2	4,0
—	23rd —	86223,655	86223,803	70.09	+ 0,21	86223,865	86224,013	2,0	3	6,0
22nd Night	23rd —	86223,553	86223,711	70.22	+ 0,34	86223,893	86224,051	2,0	1	2,0
Mean.						86223,744	86223,887	Sum of Factors		127,5

Table VII.

By the Sun.

June 1825.		Computed vibrations of the pendulum in 24 h. the clock gaining 69s.88 at a mean rate in a mean solar day.		Observed rate of the clock by sun's transits.	Corr. for diff. of obsvd. rate and 69s.88.	Correct number of vibrations made by the pendulum in a mean solar day at temp. 50°		No. of stars observed.	Interval of Transits.	Factors.
From	To	Disappear.	Mean of Dis. and Re-app.			Disappear.	Mean of Dis. and Re app.			
				s.	vib.					
15th Aftn	17th Forn	86223,734	86223,864	69.74	— 0,14	86223,594	86223,724	2	2	4
—	18th	86223,759	86223,899	69.74	— 0,14	86223,619	86223,759	2	3	6
—	19th	86223,776	86223,913	69.69	— 0,19	86223,586	86223,723	2	4	8
—	21st	86223,788	86223,922	69.76	— 0,12	86223,668	86223,802	2	6	12
—	22d	86223,768	86223,906	69.74	— 0,14	86223,628	86223,766	2	7	14
—	23d	86223,736	86223,877	69.80	— 0,08	86223,656	86223,797	2	8	16
17th Aftn	18th Forn	86223,809	86223,968	69.74	— 0,14	86223,669	86223,828	2	1	2
—	19th	86223,818	86223,962	69.64	— 0,24	86223,578	86223,722	2	2	4
—	21st	86223,816	86223,953	69.77	— 0,11	86223,706	86223,843	2	4	8
—	22d	86223,782	86223,923	69.73	— 0,15	86223,632	86223,773	2	5	10
—	23d	86223,736	86223,881	69.81	— 0,07	86223,666	86223,811	2	6	12
18th Aftn	19th Forn	86223,827	86223,956	69.55	— 0,33	86223,497	86223,626	2	1	2
—	21st	86223,819	86223,948	69.78	— 0,10	86223,719	86223,848	2	3	6
—	22d	86223,775	86223,911	69.73	— 0,15	86223,625	86223,761	2	4	8
—	23d	86223,721	86223,863	69.83	— 0,05	86223,671	86223,813	2	5	10
19th Aftn	21st Forn	86223,815	86223,943	69.89	+ 0,01	86223,825	86223,953	2	2	4
—	22d	86223,756	86223,895	69.79	— 0,09	86223,666	86223,805	2	3	6
—	23d	86223,693	86223,838	69.90	+ 0,02	86223,713	86223,858	2	4	8
21st Aftn	22d Forn	86223,653	86223,811	69.59	— 0,29	86223,363	86223,521	2	1	2
—	23d	86223,586	86223,746	69.90	+ 0,02	86223,606	86223,766	2	2	4
22d Aftn	23d Forn	86223,519	86223,681	70.21	+ 0,33	86223,849	86224,011	2	1	2
Mean						86223,645	86223,786	Sum of Factors		148

The number of vibrations made by the pendulum in 24 mean solar hours, as obtained by the disappearance of the white disk, from rates deduced by the transits of stars, is 86223,744, and by the sun 86223,645. And of those resulting from the mean of disappearance and re-appearance by the stars, is 86223,877, and by the sun 86223,786; but the sums of the factors being respectively 127,5, and 148, the

mean number of vibrations in 24 hours is 86223,659 by the observation of disappearance, and 86223,800 by the mean of disappearance and re-appearance.

The mean height of the barometer was 29,844 inches, and the mean temp. 50°.15; whence it appears that the specific gravity of the pendulum was to that of air, as 7000,6 to 1, which gives 6ᵛ.158 as a correction additive for the buoyancy of the atmosphere. The ball of the pendulum was found by levelling to be 121,04 feet above low water (neap tides), the correction for which by the duplicate ratio of distances from the earth's centre (3950,858 miles) is, 0ᵛ.500 in 24 hours. And as the station was the tabular surface of a bed of secondary limestone, I suppose the proper multiplier is $\frac{66}{100}$, which will give 0ᵛ.330 for the correction to be added due to this elevation. These corrections being applied to the number of vibrations before found, will give the number of vibrations that would have been made by the pendulum in a mean solar day, in vacuo at the level of the sea, the temperature being 50° of FAHRENHEIT at Port Bowen, in latitude* 73° 13′ 39″.4 N, longitude 88° 54′ 48″ W, and are as follows:

By the observation of disappearance - 86230,147

By the mean of disappearance and re-appear. 86230,288

The state of the ice in the offing being such, as to indicate no immediate prospect of the ships leaving Port Bowen, I gladly availed myself of Captain PARRY's permission to pursue these observations by another series; the difference between the results of which, and those of the first series, being only 0.105 of a vibration in 24 hours, affords, it is presumed,

* The elements of the observations for the latitude, and longitude, are given in the Appendix to the Narrative of Captain PARRY'S Third Voyage for the Discovery of a North-West Passage.

a satisfactory proof, that no material error in the rate of the clock is to be feared, from the limited number of transits of stars, to which I was confined during the experiments.

The following are the observations of the Second Series.

Experiment II.—*Second Series at Port Bowen, July* 1825.

Comparisons of Chronometer No. I. with the Clock.

Date.	Chronometer.	Clock.	Difference.
	h. m. s.	h. m. s.	h. m. s.
Noon 6th.	2 16 23,5	9 17 00	4 59 23,5
— —	2 26 23	9 27 00	4 59 23
P. M. —	9 21 33,5	4 22 30	4 59 3,5
— —	9 32 3	4 33 00	4 59 3
— —	1 37 51,5	8 39 00	4 58 51,5
— —	1 48 51	8 50 00	4 58 51
P. M. 7th.	9 19 56	4 22 00	4 57 56
— —	9 30 55,5	4 33 00	4 57 55,5
— —	1 35 44	8 38 00	4 57 44
— —	1 46 43,5	8 49 00	4 57 43,5
Noon 8th.	2 16 8	9 19 00	4 57 8
— —	2 27 7,5	9 30 00	4 57 7,5
P. M. —	9 11 48,5	4 15 00	4 56 48,5
— —	9 22 48	4 26 00	4 56 48
— —	1 29 36,5	8 33 00	4 56 36,5
— —	1 51 35,5	8 55 00	4 56 35,5
Noon 9th.	2 17 00,5	9 21 00	4 56 0,5
— —	2 28 00	9 32 00	4 56 00
P. M. —	9 4 41,5	4 9 00	4 55 41,5
— —	9 15 41	4 20 00	4 55 41
— —	1 32 29	8 37 00	4 55 29
— —	1 42 28,5	8 47 00	4 55 28,5
Noon 10th.	2 14 53	9 20 00	4 54 53
— —	2 24 52,5	9 30 00	4 54 52,5
P. M. —	8 58 34	4 4 00	4 54 34
— —	9 19 33	4 25 00	4 54 33
— —	1 25 21,5	8 31 00	4 54 21,5
— —	1 35 21	8 41 00	4 54 21

Transits observed at Port Bowen, July 1825—(*2nd Series.*)

Date.	Stars.	1st Wire observed.	1st Wire corrected.	2nd Wire.	3rd Wire.	4th Wire.	5th Wire.	Mean Chron.	Comparison of Chro. with Clock.	Mean Clock.	Clock at mean Noon.
		h. m. s.	h. m. s.	m. s.	h. m. s.	m. s.	m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
July 6th Noon	⊙'s 1st Limb	2 18 4	.....	18 325	2 19 00,5	19 29	19 56,5				
	⊙'s 2nd Limb	2 20 21	.....	20 49,75	2 21 18	21 45,5	22 13,5				
	⊙'s Centre	2 19 12,5	2 19 13,26	19 41,12	2 20 9,25	20 37,25	21 5	2 29 9,19	4 59 23,31	9 20 45,88	9 16 28,54
P. M.	Arcturus	9 23 50,5	9 23 51,24	24 18,5	9 24 46	25 13	25 40,6	9 24 45,89	4 59 3,35	4 25 42,54	
	α Lyræ	1 46 17	1 46 17,9	46 51	1 47 23,5	47 56	48 29	1 47 23,48	4 58 51,07	8 48 32,41	
P. M. 7th	Arcturus	9 19 56,5	9 19 57,24	20 25,5	9 20 52,5	21 20	21 47,5	9 20 52,54	4 57 55,96	4 22 56,58	
	α Lyræ	1 42 23,5	1 42 24,4	42 57,5	1 43 30,5	44 3,5	44 36	1 43 30,4	4 57 43,65	8 45 46,75	
8th Noon	⊙'s 1st Limb	2 18 28	.....	18 57,5	2 19 25	19 52,5	20 20,5				
	⊙'s 2nd Limb	2 20 45,5	.....	21 14	2 21 42	22 10	22 38				
	⊙'s Centre	2 19 36,75	2 19 37,51	20 5,75	2 20 33,5	21 1,25	21 29,25	2 20 33,46	4 57 7,8	9 23 25,66	9 18 48,99
P. M.	Arcturus	9 16 4	9 16 4,74	16 32	9 16 59	17 26,5	17 54	9 16 59,21	4 56 48,26	4 20 10,95	
	α Lyræ	1 38 30	1 38 30,9	39 4,5	1 39 37	40 10	40 42,5	1 39 36,98	4 56 36,05	8 43 0,93	
9th Noon	⊙'s 1st Limb	2 18 40,5	.....	19 9	2 19 37	20 4,7	20 32,5				
	⊙'s 2nd Limb	2 20 56,9	.....	21 25,5	2 21 53,5	22 21	22 49				
	⊙'s Centre	2 19 48,7	2 19 49,46	20 17,25	2 20 45,25	21 12,85	21 40,75	2 20 45,13	4 56 0,33	9 24 44,8	9 19 59,03
P. M. 9th	Arcturus	9 12 10	9 12 10,74	12 38,5	9 13 5,5	13 33	14 00,5	9 13 5,62	4 55 41,08	4 17 24,54	
	α Lyræ	1 34 37	1 34 37,9	35 11	1 35 43,5	36 16,5	36 49,5	1 35 43,65	4 55 28,84	8 40 14,81	
10th Noon	⊙'s 1st Limb	2 18 51,5	.....	19 20,5	2 19 48	20 16	20 43,5				
	⊙'s 2nd Limb	2 21 8,25	.....	21 37,5	2 22 5	22 33	23 1				
	⊙'s Centre	2 19 59,87	2 20 00,63	20 29	2 20 56,5	21 24,5	21 52,25	2 20 56,56	4 54 52,7	9 26 3,86	9 21 9,36
P. M.	Arcturus	9 8 16,5	9 8 17,24	8 45	9 9 12,5	9 39,5	10 7	9 9 12,29	4 54 33,49	4 14 38,8	
	α Lyræ	1 30 43,2	1 30 44,10	31 17	1 31 50	32 23	32 55,5	1 31 49,93	4 54 21,18	8 37 28,75	

Observation of Coincidences at Port Bowen (2nd Series).

P. M. July 6, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88. in 24 h.

Hygr. { Temp. 51°. / Dew Pt. 40°. } Barr. { Begs. 29 694 mer. 48°.5. / Ends. 29.694 — 48°.5. } = 29.755 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
50,6	10 31 36	31 39	31 37,5	1.18	1.140	694	695	86220,687	86221,046	2.125	86222,812	86223,171
50,9	42 10	42 15	42 12,5	1.10	1.060	696	696	86221,403	86221,403	1.837	86223,240	86223,240
51,0	53 46	53 51	43 48,5	1.02	0.985	696	696	86221,403	86221,403	1.586	86222,989	86222,989
50,9	11 5 22	5 27	5 24,5	0.95	0.920	697	698,5	86221,760	86222,293	1.384	86223,144	86223,677
50,5	16 59	17 7	17 3	0.89	0.855	697	697,5	86221,760	86221,938	1.193	86222,953	86223,131
50,3	28 36	28 45	28 40,5	0.82	0.795	698	698	86222,116	86222,116	1.033	86223,149	86223,149
50,1	40 14	40 23	40 18,5	0.77	0.745	700	700	86222,823	86222,823	0.907	86223,730	86223,730
50,1	51 54	52 3	51 58,5	0.72	0.690	698	699	86222,116	86222,470	0 776	86222,892	86223,246
50,5	12 3 32	3 43	3 37,5	0.66	0 640	699	699	86222,470	86222,470	0.670	86223,140	86223,140
51,0	15 11	15 22	15 16,5	0.62								
50,59	Mean.										86223,117	86223,275
0,59	Diff. to 50°.									Correction for Temp. 0°.59.	+ 0,249	+ 0,249
										Vib. in 24 h. at Temp. 50°.	86223,366	86223,524

P. M. July 6, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88. in 24 h.

Hygr. { Temp. 50°.5. / Dew Pt. 40°.0. } Barr. { Begs. 29,694 mer. 48°.5. / Ends. 29,760 — 49°. } = 29.757 mean cor. to temp. of pend.

51,0	12 32 4	32 7	32 5,5	1.17	1.130	695	696	86221,046	86221,403	2.088	86223,134	86223,491
50,6	43 39	43 44	43 41,5	1.09	1.050	697	697	86221,760	86221,760	1.803	86223,563	86223,563
50,5	55 16	55 21	55 18,5	1.01	0.975	696	697	86221,403	86221,760	1.554	86222,957	86223,314
50,3	1 6 52	6 59	6 55,5	0.94	0.920	698	698,5	86222,116	86222,293	1.384	86223,500	86223,677
50,3	18 30	18 38	18 34	0.88	0.850	698	697,5	86222,116	86221,938	1.178	86223,294	86223,116
50,8	30 8	30 15	30 11,5	0.82	0.790	696	697	86221,403	86221,760	1.020	86222,423	86222,780
51,2	41 44	41 53	41 48,5	0.76	0.730	699	699,5	86222,470	86222,647	0.871	86223,341	86223,518
51,0	53 23	53 33	43 28	0.70	0.675	698	698	86222,116	86222,116	0.745	86222,861	86222,861
50,9	2 5 1	5 11	5 6	0.65	0.630	699	699,5	86222,470	86222,647	0.649	86223,119	86223,296
50,8	16 40	16 51	16 45,5	0.61								
50,74	Mean.										86223,132	86223,291
0,74	Diff. to 50°.									Correction for Temp. 0°.74.	+ 0,313	+ 0,313
										Vibra. in 24 h. at Temp. 50°.	86223,445	86223,604

Observation of Coincidences at Port Bowen (2nd Series)—continued.

A. M. July 7, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygʳ. { Temp. 53°. Dew Pᵗ. 44°.

Barʳ. { Begˢ. 29.684 mer. 49°. Endˢ. 29.690 — 51°. } = 29.749 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
52,8	4 7 26	7 29	7 27,5	1.16	1.120	693	694	86220,328	86220,687	2.051	86222,379	86222,738
52,2	18 59	19 4	19 1,5	1.08	1.040	694	694,5	86220,687	86220,867	1.768	86222,455	86222,635
52,9	30 33	30 39	30 36	1.00	0.965	694	694	86220,687	86220,687	1.523	86222,210	86222,210
53,9	42 7	42 13	43 10	0.93	0.900	695	695,5	86221,046	86221,225	1.324	86222,370	86222,549
53.5	53 42	53 49	53 45,5	0.87	0.845	694	694,5	86220,687	86220,867	1.166	86221,853	86222,033
53,2	5 5 16	5 24	5 20	0.82	0.795	696	696,5	86221,403	86221,582	1.033	86222,436	86222,615
53,0	16 52	17 1	17 56,5	0.77	0.745	697	696	86221,760	86221,403	0.907	86222,667	86222,310
52,0	28 29	28 36	28 32,5	0 72	0.695	694	696,5	86220,687	86221,582	0.788	86221,475	86222,370
52,2	40 3	40 15	40 9	0.67	0.645	697	697	86221,760	86221,769	0.680	86222,440	86222,440
52,6	51 40	51 52	51 46	0.62								
52,83	Mean.										86222,254	86222,433
2,83	Diff. to 50°.								Correction for Temp. 2°.83.		+ 1,197	+ 1,197
									Vibrations in 24 h. at Temp. 50°.		86223,451	86223,630

A. M. July 7, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygʳ. { Temp. 54°. Dew Pᵗ. 43°.

Barʳ. { Begˢ. 29.682 mer. 51°. Endˢ. 29.681 — 51°.2. } = 29.742 mean cor. to temp. of pend.

53,8	6 32 28	32 31	32 29,5	1.18	1.140	692	693	86219,967	86220,328	2.125	86222,092	86222,453
53,5	44 00	45 5	44 2,5	1.10	1.060	692	692	86219,967	86219,967	1.837	86221,804	86221,804
53,5	55 32	55 37	55 34,5	1.02	0.985	694	694,5	86220,687	86220,867	1.586	86222,273	86222,453
54,0	7 7 6	7 12	7 9	0.95	0.915	693	694	86220,328	86220,687	1.369	86221,697	86222,056
54,0	18 39	18 47	18 43	0.88	0.850	694	694,5	86220,687	86220,867	1.178	86221,865	86222,045
54,0	30 13	30 22	30 17,5	0.82	0.795	695	695	86221,046	86221,046	1.033	86222,079	86222,079
54,0	41 48	41 57	41 52,5	0.77	0.745	694	694	86220,687	86220,687	0.907	86221,594	86221,594
54,0	53 22	53 31	53 26,5	0.72	0.695	696	696	86221,403	86221,403	0.788	86222,191	86222,191
53,6	8 4 58	5 7	5 2,5	0.67	0.650	695	695,5	86221,046	86221,225	0.691	86221,737	86221,916
53,1	16 33	16 43	16 38	0.63								
53,75	Mean.										86221,926	86222,066
3,75	Diff. to 50°.								Correction for Temp. 3°.75.		+ 1,586	+ 1,586
									Vibra. in 24 h. at Temp. 50°.		86223,512	86223,652

Observation of Coincidences at Port Bowen (2nd Series)—continued.

P. M. July 7, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h. Hygʳ. { Temp. 53°. Dew Pt. 43°. } Barʳ. { Begˢ. 29.683 mer. 51°.5. Endˢ. 29.692 — 51°. } = 29.746 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
52,8	10 28 44	28 47	28 45,5	1.16	1.120	693	693,5	86220,328	86220,508	2.051	86222,379	86222,559
52,6	40 17	40 21	40 19	1.08	1.045	694	694,5	86220,687	86220,867	1.785	86222,472	86222,652
52,7	51 51	51 56	51 53,5	1.01	0.975	695	695	86221,046	86221,046	1.554	86222,600	86222,600
52,2	11 3 26	3 31	3 28,5	0.94	0.905	694	695	86220,687	86221,046	1.339	86222,026	86222,385
52,0	15 00	15 7	15 3,5	0.87	0.845	696	696	86221,403	86221,403	1.166	86222,569	86222,569
52,5	26 36	26 43	26 39,5	0.82	0.790	696	697	86221,403	86221,760	1.020	86222,423	86222,780
53,0	38 12	38 21	38 16,5	0.76	0.735	697	696,5	86221,760	86221,582	0.883	86222,643	86222,465
53,0	49 49	49 57	49 53	0.71	0.680	695	695,5	86221,046	86221,225	0.756	86221,802	86221,981
53,1	12 1 4	1 33	1 28,5	0.65	0.635	696	697	86221,403	86221,760	0.659	86222,062	86222,419
53,1	13 00	13 11	13 5,5	0.62								
52,7	Mean.										86222,331	86222,490
2,7	Diff. to 50°.									Correction for Temp. 27°.	+ 1,142	+ 1,142
										Vibrations in 24 h. at Temp. 50°.	86223,473	86223,632

P. M. July 7, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h. Hygʳ. { Temp. 53°. Dew Pt. 43°. } Barʳ. { Begˢ. 29.692 mer. 51°. Endˢ. 29.700 — 51°.2. } = 29.756 mean cor. to temp. of pend.

52,8	1 6 40	6 44	6 42	1.16	1.120	694	694,5	86220,687	86220,867	2.051	86222,738	86222,918
52,5	18 14	18 19	18 16,5	1.08	1.040	693	693,5	86220,328	86220,508	1.768	86222,096	86222,276
53,0	29 47	29 53	29 50	1.00	0.970	694	694	86220,687	86220,687	1.538	86222,225	86222,225
53,5	41 21	41 27	41 24	0.94	0.900	695	695,5	86221,046	86221,225	1.324	86222,370	86222,549
52,8	52 56	53 3	52 59,5	0.86	0.830	696	696	86221,403	86221,403	1,122	86222,525	86222,525
52,7	2 4 32	4 39	4 35,5	0.80	0.775	695	695,5	86221,046	86221,225	0.982	86222,028	86222,207
52,6	16 7	16 15	16 11	0.75	0.725	694	695	86220,687	86221,046	0.859	86221,546	86221,905
53,7	27 41	27 51	27 46	0.70	0.675	695	695,5	86221,046	86221,225	0.745	86221,791	86221,970
53,8	39 16	39 27	39 21,5	0.65	0.630	696	696	86221,403	86221,403	0.649	86222,052	86222,052
53,5	50 52	51 3	50 57,5	0.61								
53,09	Mean.										86222,152	86222,292
3,09	Diff. to 50°.									Correction for Temp. 3°.09.	+ 1,307	+ 1,307
										Vibra. in 24 h. at Temp. 50°.	86223,459	86223,599

Observation of Coincidences at Port Bowen (2nd Series)—continued.

A. M. July 8, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h. Hygr. { Temp. 50°. Dew Pt. 40°. } Bar. { Begs. 29.749 mer. 48°. Ends. 29.747 — 48°.2. } = 29,810 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Observed vibra. cor. for Arc. Disappearance.	Observed vibra. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
49,8	4 12 42	12 47	12 44,5	1.16	1.120	696	696	86221,403	86220,403	2.051	86223,454	86223,454
49,9	24 18	24 23	24 20,5	1.08	1.045	696	696,5	86221,403	86221,582	1.786	86223,189	86223,368
50,5	35 54	36 00	35 57	1.01	0.975	696	696,5	86221,403	86221,582	1.554	86222,957	86223,136
50,8	47 30	47 37	47 33,5	0.94	0.905	696	696,5	86221,403	86221,582	1.339	86222,742	86222,921
50,5	59 6	59 14	59 10	0.87	0.840	698	698,5	86222,116	86222,293	1.154	86223,270	86223,447
50,3	5 10 44	10 53	10 48,5	0.81	0.780	698	698	86222,116	86222,116	0.995	86223,111	86223,111
50,0	22 22	22 31	22 26,5	0.75	0.730	699	700,5	86222,470	86223,000	0.871	86223,341	86223,871
49,9	34 1	34 13	34 7	0.71	0.685	699	698,5	86222,470	86222,293	0.766	86223,236	86223,059
49,8	45 40	45 51	45 45,5	0.66	0.635	700	700	86222,823	86222,823	0.659	86223,482	86223,482
50,0	57 20	57 31	57 25,5	0.61								
50,15	Mean.										86223,198	86223,316
0,15	Diff. to 50°.								Correction for Temp. 0°.15.		+ 0,063	+ 0,063
									Vibra. in 24 h. at Temp. 50°.		86223,261	86223,379

A. M. July 8, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h. Hygr. { Temp. 50°. Dew Pt. 40°. } Bar. { Begs. 29.750 mer. 48°.2. Ends. 29.751 — 48°. } = 29.810 mean cor. to temp. of pend.

49,9	6 49 8	49 11	49 9,5	1.16	1.120	696	697	86221,403	86221,760	2.051	86223,454	86223,811
49,5	7 00 44	00 49	00 46,5	1.08	1.045	696	697	86221,403	86221,760	1.786	86223,189	86223,546
49,2	12 20	12 27	12 23,5	1.01	0.975	699	698	86222,470	86222,116	1.554	86224,024	86223,670
49,1	23 59	24 4	22 1,5	0.94	0.905	698	699,5	86222,116	86222,647	1.339	86223,455	86223,986
49,2	35 37	35 45	35 41	0.87	0.840	699	698,5	86222,470	86222,293	1.154	86223,624	86223,447
49,2	47 16	47 23	47 19,5	0.81	0.780	698	699	86222,116	86222,470	0.995	86223,111	86223,465
49,2	58 54	59 3	54 58,5	0.75	0.730	701	701	86223,176	86223,176	0.871	86224,047	86224,047
49,4	8 10 35	10 44	10 39,5	0.71	0.685	699	699,5	86222,470	86222,647	0.766	86223,236	86223,413
49,4	22 14	22 24	22 19	0.66	0.635	701	701	86223,176	86223,176	0.659	86223,835	86223,835
49,5	33 55	34 5	34 00	0.61								
49,36	Mean.										86223,553	86223,691
0,64	Diff. to 50°.								Correction for Temp. 0°.64.		— 0,271	— 0,271
									Vibra. in 24 h. at Temp. 50°.		86223,282	86223,420

Observation of Coincidences at Port Bowen (2nd Series)—continued.

P. M. July 8, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h.

Hygr. { Temp. 51°. Dew Pt. 40°. } Barr. { Begg. 29.750 mer. 49°.5. Endg. 29.752 — 49°. } = 29.812 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. Re-ap.	Correct. for Arc.	Observed vibra. cor. for Arc. Disappearance.	Observed vibra. cor. for Arc. Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
51,0	10 22 15	22 19	22 17	1.16	1.120	695	695,5	86221,046	86221,225	2.051	86223,097	86223,276
50,8	33 50	33 55	33 52,5	1.08	1.045	696	697	86221,403	86221,760	1.785	86223,188	86223,545
50,5	45 26	45 33	45 29,5	1.01	0.980	697	697	86221,760	86221,760	1.570	86223,330	86223,330
50,7	57 3	57 10	57 6,5	0.95	0.915	697	698	86221,760	86222,116	1.369	86223,129	86223,485
50,5	11 8 40	8 49	8 44,5	0.88	0.850	698	698	86222,116	86222,116	1.178	86223,294	86223,294
50,3	20 18	20 27	20 22,5	0.82	0.790	700	699,5	86222,823	86222,647	1 020	86223,843	86223,667
50,2	31 58	32 6	32 2	0.76	0.735	699	700	86222,470	86222,823	0.883	86223,353	86223,706
50,0	43 37	43 47	43 42	0.71	0.680	699	699,5	86222,470	86222,647	0.756	86223,226	86223,403
50,0	55 16	55 27	55 21,5	0.65	0.630	698	699,5	86222,116	86222,647	0.649	86222,765	86223,296
49,6	12 6 54	7 8	7 1	0.61								
50,36	Mean.										86223,247	86223,445
0,36									Correction for Temp. 0°.36.		+ 0,152	+ 0,152
	Diff. to 50°.								Vibra. in 24 h. at Temp. 50°.		86223,399	86223,597

P. M. July 8, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h.

Hygr. { Temp. 50°. Dew Pt. 38°.5. } Bar. { Begg. 29.752 mer. 49°. Endg. 29.764 — 49°.5. } = 29.819 mean cor. to temp. of pend.

50,5	12 35 36	35 39	35 37,5	1.19	1.150	696	696,5	86221,403	86221,582	2.162	86223,565	86223,744
50,2	47 12	47 16	47 14	1.11	1.070	696	696,5	86221,403	86221,582	1.872	86223,275	86223,454
50,1	58 48	58 53	58 50,5	1.03	0.990	697	698	86221,760	86222,116	1.602	86223,362	86223,718
50,2	1 10 25	10 32	10 28,5	0.95	0.915	697	697	86221,760	86221,760	1.369	86223,129	86223,129
50,7	22 2	22 9	22 5,5	0.88	0.850	698	698,5	86222,116	86222,293	1.178	86223,294	86223,471
50,8	33 40	33 48	33 44	0.82	0.795	698	698,5	86222,116	86222,293	1.033	86223,149	86223,326
50,8	45 18	45 27	45 22,5	0.77	0.745	698	698,5	86222,116	86222,293	0.907	86223,023	86223,200
50,6	56 56	57 6	57 1	0.72	0.695	700	700,5	86222,823	86223,000	0.788	86223,611	86223,788
50,5	2 8 36	8 47	8 41,5	0.67	0.645	700	700	86222,823	86222,823	0.680	86223,503	86223,503
50,5	20 16	20 27	20 21,5	0.62								
50,49	Mean.										86223,323	86223,481
0,49									Correction for Temp. 0°.49.		+ 0,207	+ 0,207
	Diff. to 50°.								Vibra. in 24 h. at Temp. 50°.		86223,530	86223,688

Observation of Coincidences at Port Bowen (2nd Series)—continued.

A.M. July 9, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h, Hygʳ. { Temp. 52°. Dew P. 44°. Barʳ. { Begˢ. 29.750 mer. 49°. Endˢ. 29.750 — 51°. } = 29.812 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
51,0	6 44 31	44 35	44 33	1.19	1.145	695	695,5	86221,046	86221,225	2.143	86223,189	86223,368
51,0	56 6	56 11	56 8,5	1.10	1.060	696	696	86221,403	86221,403	1.837	86223,240	86223,240
50,8	7 7 42	7 47	7 44,5	1.02	0.985	696	697	86221,403	86221,760	1.586	86222,989	86223,346
51,0	19 18	19 25	19 21,5	0.95	0.915	698	697,5	86222,116	86221,938	1.369	86223,485	86223,307
51,1	30 56	31 2	30 59	0.88	0.850	697	697,5	86221,760	86221,938	1.178	86222,938	86223,116
51,0	42 33	42 40	42 36,5	0.82	0.790	698	698	86222,116	86222,116	1.020	86223,136	86223,136
51,0	54 11	54 18	54 14,5	0.76	0.740	697	698	86221,760	86222,116	0.895	86222,655	86223,011
51,8	8 5 48	5 57	5 52,5	0.72	0.695	698	698,5	86222,116	86222,293	0.788	86222,904	86223,081
52,3	17 26	17 36	17 31	0.67	0.645	698	697,5	86222,116	86221,938	0.680	86222,796	86222,618
52,7	29 4	29 13	29 8,5	0.62								
51,37	Mean.										86223,037	86223,136
1,37	Diff. to 50°.									Correction for Temp. 1°.37.	+ 0,579	+ 0,579
										Vibra. in 24 h. at Temp. 50°.	86223,616	86223,715

P.M. July 9, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h. Hygʳ. { Temp. 53°, Dew Pᵗ. 42°. Barʳ. { Begˢ. 29,751 mer. 51°.5. Endˢ. 29,749 — 51°.5. } = 29,811 mean cor. to temp. of pend.

53,0	10 30 19	30 21	30 20	1.20	1.160	692	693,5	86219,967	86220,508	2.200	86222,167	86222,708
52,6	41 51	41 56	41 53,5	1.12	1.080	696	695,5	86221,403	86221,225	1.907	86223,310	86223,132
52,7	53 27	53 31	53 29	1.04	1.005	694	695,5	86220,687	86221,225	1.651	86222,338	86222,876
52,6	11 5 1	5 8	5 4,5	0.97	0.935	695	695	86221,046	86221,046	1.429	86222,475	86222,475
52,6	16 36	16 43	16 39,5	0.90	0.870	696	696,5	86221,403	86221,582	1.237	86222,640	86222,819
52,7	28 12	28 20	28 16	0.84	0.815	696	696	86221,403	86221,403	1.086	86222,489	86222,489
52,8	39 48	39 56	39 52	0.79	0.760	697	697	86221,760	86221,760	0.944	86222,704	86222,704
52,8	51 25	51 33	51 29	0.73	0.710	697	697	86221,760	86221,760	0.824	86222,584	86222,584
52,9	12 3 2	3 10	3 6	0.69	0.660	696	697	86221,403	86221,760	0.712	86222,115	86222,472
52,8	14 38	14 48	14 43	0.63								
52,75	Mean.										86222,536	86222,695
2,75	Diff. to 50°.									Correction for Temp. 2°.75.	+ 1,163	+ 1,163
										Vibra. in 24ʰ at Temp. 50°.	86223,699	86223,858

Observation of Coincidences at Port Bowen (2nd Series)—continued.

P. M. July 9, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygʳ. { Temp. 53°. / Dew Pt. 42°.

Barʳ. { Begˢ. 29.749 mer. 51°.5. / Endg. 29.739 — 51°.8. } = 29.804 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds by Clock. Disap.	Interval in seconds by Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
53,0	1 26 10	26 13	26 11,5	1.21	1.170	692	692,5	86219,967	86220,148	2.238	86222,205	86222,386
53,0	37 42	37 46	37 44	1.13	1.090	694	694,5	86220,687	86220,867	1.942	86222,629	86222,809
52,5	49 16	49 21	49 18,5	1.05	1.015	695	696	86221,046	86221,403	1.683	86222,729	86223,086
52,3	2 00 51	00 58	00 54,5	0.98	0.950	695	695	86221,046	86221,046	1.476	86222,522	86222,522
52,3	12 26	12 33	12 29,5	0.92	0.885	696	696	86221,403	86221,403	1.280	86222,683	86222,683
52,7	24 2	24 9	24 5,5	0.85	0.820	695	695,5	86221,046	86221,225	1.099	86222,145	86222,324
53,0	35 37	35 45	35 41	0.79	0.760	696	697	86221,403	86221,760	0.944	86222,347	86222,704
52,9	47 13	47 23	47 18	0.73	0.705	697	697	86221,760	86221,760	0.812	86222,572	86222,572
53,0	58 50	59 00	58 55	0.68	0.655	696	696,5	86221,403	86221,582	0.701	86222,104	86222,283
53,0	3 10 26	10 37	10 31,5	0.63								
52,77	Mean.										86222,437	86222,597
2,77	Diff. to 50°.									Correction for Temp. 2°.77.	+1,172	+1,172
										Vibrations in 24 h. at Temp. 50°.	86223,609	86223,769

A. M. July 10, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygʳ. { Temp. 50°. / Dew Pt. 43°.

Barʳ. { Begg. 29.709 mer. 47°.5. / Endᵉ. 29.710 — 48°. } = 29.772 mean cor. to temp. of pend.

49,9	5 5 39	5 42	5 40,5	1.20	1.160	696	697	86221,403	86221,760	2.200	86223,603	86223,960
49,8	17 15	17 20	17 17,5	1.12	1.080	698	698	86222,116	86222,116	1.907	86224,023	86224,023
49,6	28 53	28 58	28 55,5	1.04	1.005	697	697,5	86221,760	86221,938	1.650	86223,410	86223,588
49,7	40 30	40 36	40 33	0.97	0.935	698	699	86222,116	86222,470	1.429	86223,545	86223,899
49,9	52 8	52 16	52 12	0.90	0.865	699	698,5	86222,470	86222,293	1.223	86223,693	86223,516
49,7	6 3 47	3 54	3 50,5	0.83	0.805	699	700	86222,470	86222,823	1.059	86223,529	86223,882
49,5	15 26	15 35	15 30,5	0.78	0.755	701	701,5	86223,176	86223,352	0.932	86224,108	86224,284
50,0	27 7	27 17	27 12	0.73	0.705	699	699	86222,470	86222,470	0.812	86223,282	86223,282
49,9	38 46	38 56	38 51	0.68	0.655	700	700,5	86222,823	86223,000	0.701	86223,524	86223,701
49,4	50 26	50 37	50 31,5	0.63								
49,74	Mean.										86223,635	86223,793
0,26	Diff. to 50°.									Correction for Temp. 0°.26.	— 0,110	— 0,110
										Vibra. in 24 h. at Temp. 50°.	86223,525	86223,683

Observation of Coincidences at Port Bowen (2nd Series)—continued.

A. M. July 10, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygr. { Temp. 50°. Dew Pt. 43°.

Barr. { Begg. 29.710 mer. 48°. Endg. 29.712 — 48°. } = 29.771 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock. Disap.	Interval in seconds of Clock. Disap. & Re-ap.	Observed vibrations in 24 h. Disappearance.	Observed vibrations in 24 h. Mean of Disap. and Re-ap.	Correct. for Arc.	Vibra. in 24 h. cor. for Arc. Disappearance.	Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
49,7	7 12 18	12 22	12 20	1.15	1.110	697	697,5	86221,760	86221,938	2.014	86223,774	86223,952
50,0	23 55	24 00	23 57,5	1.07	1.035	698	698,5	86222,116	86222,293	1.752	86223,868	86224,045
49,9	35 33	35 39	35 36	1.00	0.965	698	698,5	86222,116	86222,293	1.522	86223,638	86223,815
49,8	47 11	47 18	47 14,5	0.93	0.895	699	698,5	86222,470	86222,293	1.309	86223,779	86223,602
50,0	58 50	58 56	58 53	0.86	0.830	699	700	86222,470	86222,823	1.122	86223,592	86223,945
50,3	8 10 29	10 37	10 33	0.80	0.770	698	698,5	86222,116	86222,293	0.969	86223,085	86223,262
50,2	22 7	22 16	22 11,5	0.74	0.720	700	700	86222,823	86222,823	0.848	86223,671	86223,671
50,0	34 47	34 56	34 51,5	0 70	0.680	700	700,5	86222,823	86223,000	0.756	86223,579	86223,756
50,0	45 27	45 37	45 32	0.66	0.635	701	701	86223,176	86223,176	0.659	86223,835	86223,835
50,1	57 8	57 18	57 13	0.61								
50,0	Mean.							Vibrations in 24 h. at Temp. 50°.			86223,647	86223,765

P. M. July 10, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygr. { Temp. 50°.5. Dew Pt. 42°.

Barr. { Begg. 29.712 mer. 48°.5. Endg. 29.713 — 48°.5. } = 29.773 mean cor. to temp. of pend.

50,5	10 36 35	36 38	36 36,5	1 18	1.140	697	697,5	86221,760	86221,938	2.125	86223,885	86224,063
50,5	48 12	48 16	48 14	1.10	1.060	697	697,5	86221,760	86221,938	1.837	86223,597	86223,775
50,5	59 49	59 54	59 51,5	1.02	0,985	698	698,5	86222,116	86222,293	1.586	86223,702	86223,879
50,5	11 11 27	11 33	11 30	0 95	0.915	698	698,5	86222,116	86222,293	1.369	86223,485	86223,662
50,3	23 5	23 12	23 8,5	0.88	0.850	699	699	86222,470	86222,470	1.178	86223,648	86223,648
50,0	34 44	34 51	34 47,5	0.82	0.795	699	699,5	86222,470	86222,647	1.033	86223,503	86223,680
50,0	46 23	46 31	46 27	0.77	0.745	700	700,5	86222,823	86223,000	0.907	86223,730	86223,907
50,1	58 3	58 12	58 7,5	0.72	0.695	702	701,5	86223,527	86223,352	0.788	86224,315	86224,140
50,2	12 9 45	9 53	9 49	0.67	0.645	699	699,5	86222,470	86222,647	0.680	86223,150	86223,327
50,3	21 24	21 33	21 28,5	0.62								
50,29	Mean.										86223,668	86223,787
0,29	Diff. to 50°.							Correction for Temp. 0°.29.			+ 0,123	+ 0,123
								Vibra. in 24 h. at Temp. 50°.			86223,791	86223,910

Observation of Coincidences at Port Bowen (2nd Series)—continued.

P.M. July 10, 1825, Port Bowen. Clock gaining at an assumed rate 69°.88 in 24 h.

Hygr. { Temp. 50°. / Dew Pt. 42°.

Barr. { Begg. 29.714 mer. 48°.5. / Endg. 29.714 — 49°. } = 29.774 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. cor. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Mean of Disap. and Re-ap.		Disappearance.	Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.		°	s.	s.			vib.		
49,8	12 56 19	56 22	56 20,5	1.21	1.165	697	698	86221,760	86222,116	2.219	86223,979	86224,335
49,8	1 7 56	8 1	7 58,5	1.12	1.080	698	697,5	86222,116	86221,938	1.907	86224,023	86223,845
50,0	19 34	19 38	19 36	1.04	1.010	697	698	86221,760	86222,116	1.666	86223,426	86223,782
50,0	31 11	31 17	31 14	0.98	0.950	698	699,5	86222,116	86222,647	1.476	86223,592	86224,123
50,0	42 49	42 58	42 53,5	0.92	0.885	700	699	86222,823	86222,470	1.280	86224,103	86223,750
50,1	54 29	54 36	54 32,5	0.85	0.820	700	700	86222,823	86222,823	1.099	86223,922	86223,922
50,5	2 6 9	6 16	6 12,5	0.79	0.760	697	698	86221,760	86222,116	0.944	86222,704	86223,060
50,7	17 46	17 55	17 50,5	0.73	0.705	699	700	86222,470	86222,823	0.812	86223,282	86223,635
50,6	29 25	29 36	29 30,5	0.68	0.655	700	700	86222,823	86222,823	0.701	86223,524	86223,524
50,5	41 5	41 16	41 10,5	0.63								
50,20	Mean.										86223,617	86223,775
0,20	Diff. to 50°.							Correction for Temp. 0°.20.			+ 0,086	+ 0,086
								Vibra. in 24 h. at Temp. 50°.			86223,703	86223,861

Table I. (*2nd Series.*)

Times by Clock at Transits of Stars, at Port Bowen, July, 1825.

Stars.	6th.	7th.	8th.	9th.	10th.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
Arcturus .	4 25 42,54	4 22 56,58	4 20 10,95	4 17 24,54	4 14 38,80
α Lyræ .	8 48 32,41	8 45 46,75	8 43 00,93	8 40 14,81	8 37 28,75

Table II.

Transits of Sun. Times by Clock at the moment of Mean Noon.

6th.	8th.	9th.	10th.
h. m. s.	h. m. s.	h. m. s.	h. m. s.
9 16 28,54	9 18 48,99	9 19 59,03	9 21 9.36

Table III.

Rates of the Clock by the Stars. (Gaining.)

Stars.	From 6 to 7	From 6 to 8	From 6 to 9	From 6 to 10	From 7 to 8	From 7 to 9	From 7 to 10	From 8 to 9	From 8 to 10	From 9 to 10
	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
Arcturus	69.96	70.12	69.92	69.98	70.29	69.90	69.99	69.51	69.84	70.18
α Lyræ	70.25	70.16	70.04	69.99	70.09	69.93	69.91	69.79	69.81	69.85
Mean	70.11	70.14	69.98	69.99	70.19	69.92	69.95	69.65	69.83	70.02
Proport^{n}. for rate in 3^{m} 56^{s}	+ .19	+ .19	+ .19	+ .19	+ .19	+ .19	+ .19	+ .19	+ .19	+ .19
Rate of the Clock, gaining in a mean solar day...	70.30	70.33	70.17	70.18	70.38	70.11	70.14	69.84	70.02	70.21

Table IV.

Rates of the Clock by the Sun. (Gaining.)

From 6 to 8	From 6 to 9	From 6 to 10	From 8 to 9	From 8 to 10	From 9 to 10
s.	s.	s.	s.	s.	s.
70.22	70.16	70.20	70.04	70.18	70.33

Table V. *Second Series.*

Vibrations of the Pendulum at Port Bowen, computed at the assumed rate of the Clock, viz. 86469,88 vibrations in a mean solar day.

Date.	Time of the day.	Barometer.	Thermom.	Vibrations in 24 h. at Temp. 50°.	
				Disappearance.	Mean of Disap. and Re-ap.
		inches.	o		
July 6th	P. M.	29,755	50,59	86223,366	86223,524
—	—	,757	50,74	86223,445	86223,604
7th	A. M.	29,749	52,83	86223,451	86223,630
—	—	,742	53,75	86223,512	86223,652
—	P. M.	,746	52,70	86223,473	86223,632
—	—	,756	53,09	86223,459	86223,599
8th	A. M.	29,810	50,15	86223,261	86223,379
—	—	,810	49,36	86223,282	86223,420
—	P. M.	,812	50,36	86223,399	86223,597
—	—	,819	50,49	86223,530	86223,688
9th	A. M.	29,812	51,37	86223,616	86223,715
—	P. M.	,811	52,75	86223,699	86223,858
—	—	,804	52,77	86223,609	86223,769
10th	A. M.	29,772	49,74	86223,525	86223,683
—	—	,771	50,00	86223,647	86223,765
—	P. M.	,773	50,29	86223,791	86223,910
—	—	,774	50,20	86223,703	86223,861
Mean.		29,781	51,25	86223,516	86223,664.

Table VI. *Second Series.*

By the Stars.

July 1825.		Computed vibrations of the pendulum in 24 h. the clock gaining 69".88 (assumed rate) in a mean solar day.		Observed rate of the clock by Stars' transits.	Corrections to vibrations for diff. of rate and 69s.88.	Correct number of vibrations made by the pendulum in a mean solar day at temperature 50°.		No. of Stars observed.	Interval in days.	Factors.
From	To	Disappearance.	Mean of Disap. and Re-ap.			Disappearance.	Mean of Disap. and Re-ap.			
				s.	vib.					
7th A. M.	7th P. M.	86223,474	86223,628	70,30	+ 0,420	86223,894	86224,048	2	1	2
	8th —	86223,421	86223,575	70,33	+ 0,450	86223,871	86224,025	2	2	4
	9th —	86223,481	86223,631	70,17	+ 0,290	86223,771	86223,921	2	3	6
	10th —	86223,530	86223,677	70,18	+ 0,300	86223,830	86223,977	2	4	8
8th A. M.	8th P. M.	86223,343	86223,521	70,38	+ 0,500	86223,843	86224,021	2	1	2
	9th —	86223,485	86223,632	70,11	+ 0,230	86223,715	86223,862	2	2	4
	10th —	86223,551	86223,695	70,14	+ 0,260	86223,811	86223,955	2	3	6
9th A. M.	9th P. M.	86223,641	86223,781	69,84	— 0,040	86223,601	86223,741	2	1	2
	10th —	86223,656	86223,794	70,02	+ 0,140	86223,796	86223,794	2	2	4
10th A. M.	10th P. M.	86223,666	86223,805	70,21	+ 0,230	86223,896	86224,035	2	1	2
Mean						86223,803	86223,938	Sum of Factors		40

Table VII. *(2nd Series.)*

By the Sun.										
July, 1825.		Computed vibrations of the pendulum in 24 h. the clock gaining 69s.88 (assumed rate) in a mean solar day.		Observed rate of the clock by Sun's transits.	Corrections to vibrations for diff. of rate and 69s.88.	Correct number of vibrations made by the pendulum in a mean solar day at temperature 50°.		No. of Stars observed.	Interval in days.	Factors.
From	To	Disappearance.	Mean of Disap and Re-ap.			Disappearance.	Mean of Disap. and Re-ap.			
				s.	vib.					
6th, P. M.	8th, A.M.	86223,406	86223,555	70.22	+ 0,340	86223,746	86223,895	2	2	4
	9th —	86223,436	86223,585	70.16	+ 0,280	86223,716	86223,865	2	3	6
	10th —	86223,485	86223,634	70 20	+ 0,320	86223,805	86223,954	2	4	8
8th, P.M.	9th, A.M.	86223,515	86223,667	70.04	+ 0,160	86223,675	86223,827	2	1	2
	10th —	86223,561	86223,725	70.18	+ 0,300	86223,861	86224,025	2	2	4
9th, P.M.	10th, A.M.	86223,620	86223,769	70.33	+ 0,450	86224,070	86224,219	2	1	2
			Mean.			86223,812	86223,964	Sum of Factors		26

In this series, the number of vibrations made by the pendulum in 24 hours of mean solar time, as obtained from the observations of the disappearance of the white disk, and employing the rates furnished by the transits of stars, is 86223,803, and by the rates, from the sun's transits 86223,812. By the mean of the observations of the disappearance and re-appearance of the disk, the number of vibrations is 86223,938 by the rates, from the stars' transits, and 86223,964 by the transits of the sun. But the sum of the factors for the stars being 40, and for the sun 26, the mean number of vibrations in 24 hours, by the observation of the disappearance of the white disk is 86223,806, and by the mean of its disappearance and re-appearance 86223,948. If to each of these, we apply the corrections, $0^v,330$ for elevation, and $6^v,116$ for the buoyancy of the atmosphere, at the mean pressure 29,781 inches, and temperature $51°,25$ of FAHRENHEIT, we shall arrive at the total number of vibrations which would have been made by the pendulum in a mean solar day, the temperature being 50° of FAHRENHEIT, in vacuo, at the level of the sea at Port Bowen ; and are

By the observation of disappearance - - - 86230,252
By the mean of disappearance and re-appearance - 86230,394

By the first series, the total number of vibrations of the pendulum in 24 hours was

By the observation of disappearance - - 86230,147
By the mean of disappearance and re-appearance 86230,288

The sums of the factors, however, being 275,5 in this series, and only 66 in the second, we obtain for the final number of vibrations at Port Bowen,

By the method of disappearance - - 86230,172

By the mean of disappearance and re-app. 86230,313.

From the above data and number of vibrations made by the same pendulum from the mean of both series at Greenwich, viz.

by the method of disappearance - - 86159,368

and by mean of disappearance and re-app. 86159,500,

together with the *assumed length* of the seconds' pendulum at Greenwich 39,13911 inches; the length of the seconds' pendulum at Port Bowen is found to be nearly 39,203464 inches, by the method of disappearance, and by the mean of disappearance and re-appearance 39,203472 inches; and comparing these with 39,13911 inches, the *assumed length* in lat. 51° 28′ 39″ N. as before stated, the diminution of gravity from the pole to the equator will be by the method of disappearance ,0054152, the ellipticity of the earth $\frac{1}{309,13}$, and the length of the equatorial pendulum 39,009805 inches; and by the mean of disappearance and re-appearance, the diminution of gravity from the pole to the equator will be ,0054159, the ellipticity of the earth $\frac{1}{309,19}$, and the length of the equatorial pendulum 39,009789 inches of Sir GEORGE SCHUCKBURGH's scale.

The length of the pendulum vibrating seconds, not having been determined at Greenwich, but at Mr. BROWNE's house in London, it must be remembered that the above *lengths* are not the *true lengths* of the pendulum, but are merely given for the sake of comparison.

III. *Concluding Series at the Royal Observatory at Greenwich.*

November 1825.

Comparisons of the Clock, with the Observatory Transit Clock.

Date.	Time by Clock.	Time by the Observatory Clock.	Mean Time at Greenwich.	Clock Slow of Mean Time.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.
7th, A. M.	2 25 00	12 2 31,52	8 56 33,44	6 31 33,44
— Noon	5 25 00	15 3 1,38	11 56 34,06	6 31 34,06
— P. M.	8 34 00	18 12 32,95	3 5 34,13	6 31 34,13
8th, A. M.	2 17 29,93	11 59 00,00	8 49 6,15	6 31 36,22
— Noon	5 33 57,34	15 16 00,00	0 5 33,85	6 31 36,51
— P. M.	8 24 00	18 6 30,86	2 55 36,74	6 31 36,74
9th, A. M.	2 23 00	12 8 29,77	8 54 38,21	6 31 38,21
— Noon	5 35 00	15 21 1,54	0 6 38,40	6 31 38,40
— P. M.	8 23 00	18 9 29,38	2 54 38,60	6 31 38,60
10th, A. M.	2 25 00	12 14 28,64	8 56 39,89	6 31 39,89
— Noon	5 36 00	15 26 00,22	0 7 40,06	6 31 40,06
— P. M.	8 39 00	18 29 30,39	3 10 40,14	6 31 40,14
11th, A. M.	2 36 00	12 29 28,47	9 7 41,16	6 31 41,16
— Noon	5 28 00	15 21 56,91	11 59 41,32	6 31 41,32
— P. M.	9 13 00	19 7 34,24	3 44 41,62	6 31 41,62

From the above Table of Comparisons the following, of rates losing, has been deduced.

Times of Comparison.	From 7 to 8	From 7 to 9	From 7 to 10	From 7 to 11	From 8 to 9	From 8 to 10	From 8 to 11	From 9 to 10	From 9 to 11	From 10 to 11
	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
A. M...	2.794	2.386	2.150	1.930	1.978	1.828	1.638	1.678	1.469	1.260
Noon..	2.435	2.163	1.996	1.814	1.892	1.776	1.608	1.660	1.465	1.271
P. M...	2.630	2.241	2.002	1.862	1.853	1.687	1.606	1.522	1.483	1.445
Rate losg in a mean solar day	2.62	2.26	2.05	1.87	1.91	1.76	1.62	1.62	1.47	1.32

Observations of Coincidences at Greenwich, November, 1825.

Height above the level of the sea 181,5 feet.

A. M. November 7th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29.121 mer. 45°. } = 29.115 mean cor. to
{ Endᵍ. 29.125 — 45°. } temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. cor. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Mean of Disap. and Re-ap.		Disappearance.	Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
43,5	3 21 00	21 5	21 2,5	1.16	1.120	710	710	.....	.....	2.050	.....	.....
43,6	32 50	32 55	32 52,5	1.08	1.040	710	711	.....	.....	1.769	.....	.....
43,8	44 40	44 47	44 43,5	1.00	0.970	711	711	.....	.....	1.538	.....	.....
43,9	56 31	56 38	56 34,5	0.94	0.910	710	710,5	.....	.....	1.353	.....	.....
44,0	4 8 21	8 29	8 25	0.88	0.855	712	712	.....	.....	1.194	.....	.....
44,0	20 13	20 21	20 17	0.83	0.795	711	711,5	.....	.....	1.034	.....	.....
44,2	32 4	32 13	32 8,5	0.76	0.735	712	712	.....	.....	0.882	.....	.....
44,5	43 56	44 5	44 0,5	0.71	0.685	713	712,5	.....	.....	0.766	.....	.....
44,7	55 49	55 57	55 53	0.66	0.640	712	713	.....	.....	0.671	.....	.....
44,9	5 7 41	7 51	7 46	0.62								
44,11	Means.					711,11	711,5	86155,135	86155,268	1.251	86156,386	86156,519

P. M. November 7th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29.125 mer. 45°.5. } = 29.126 mean cor. to
{ Endᵍ. 29.144 — 46°.2. } temp. of pend.

46	6 29 36	29 43	29 39,5	1.16	1.120	709	707,5	.... .	. ....	2.050	.....	.....
46	41 25	41 29	41 27	1.08	1.040	706	707	.....	.....	1.769	.....	.....
46	53 11	53 17	53 14	1.00	0.965	708	708,5	.....	.....	1.523	.....	.....
46	7 4 59	5 6	5 2,5	0.93	0.900	708	708,5	.....	.....	1.324	.....	.....
46	16 47	16 55	16 51	0.87	0.840	709	709,5	.....	.....	1.154	.....	.....
46,2	28 36	28 45	28 40,5	0.81	0.780	709	709	.....	.....	0.996	.....	.....
46,4	40 25	40 34	40 29,5	0.75	0.720	709	710	.....	.....	0.846	.....	.....
46,3	52 14	52 25	52 19,5	0.69	0.665	710	710	.....	.....	0.722	.....	.....
46,2	8 4 4	4 15	4 9,5	0.64	0.620	710	711	.....	.....	0.628	.....	.....
46,2	15 54	16 7	16 0,5	0.60								
46,13	Means.					708,667	709,0	86154,297	86154,412	1.224	86155,521	86155,636

Observations of Coincidences at Greenwich—continued.

Height above the level of the sea 181,5 feet.

A. M. November 8th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29.251 mer. 39°.5. } = 29.200 mean cor. to
{ Endᵍ. .163 — 42°.0. } temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. cor. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Mean of Disap. and Re-ap.		Disappearance	Mean of Disap. and Re-ap.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
40,0	3 27 28	27 33	27 30,5	1.18	1.135	712	712	.....	.....	2.106	.....	.....
40,2	39 20	39 25	39 22,5	1.09	1.055	712	713	.....	.....	1.820	.....	.....
40,6	51 12	51 19	51 15,5	1.02	0.985	714	714	.....	.....	1.587	.....	.....
40,9	4 3 6	3 13	3 9,5	0.95	0.915	713	713,5	.....	.....	1.368	.....	.....
41,0	14 59	15 7	15 3	0.88	0.850	714	714	.....	.....	1.181	.....	.....
41,0	26 53	27 1	26 57	0.82	0.785	713	714,5	.....	.....	1.009	.....	.....
41,2	38 46	38 57	38 51,5	0.75	0.725	714	714	.....	.....	0.857	.....	.....
41,9	50 40	50 51	50 45,5	0.70	0.675	713	713,5	.....	.....	0.744	.....	.....
42,1	5 2 33	2 45	2 39	0.65	0.630	715	714,5	.....	.....	0.649	.....	.....
42,1	14 28	14 39	14 33,5	0.61								
41,1	Means.					713,333	713,667	86155,892	86156,005	1.258	86157,150	86157,263

P. M. November 8th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29.104 mer. 42°.8. } = 29.058 mean cor. to
{ Endᵍ. .029 — 45°. } temp. of pend.

43,1	6 26 34	26 40	26 37	1.14	1.095	710	709	.....	.....	1.961	.....	.....
43,2	38 24	38 28	38 26	1.05	1.015	708	709,5	.....	.....	1.684	.....	.....
43,2	50 12	50 19	50 15,5	0.98	0.945	710	711	.....	.....	1.461	.....	.....
43,7	7 2 2	2 11	2 6,5	0.91	0.880	710	710	.....	.....	1.266	.....	.....
44,0	13 52	14 1	13 56,5	0.85	0.825	710	709,5	.....	.....	1.111	.....	.....
44,2	25 42	25 50	25 46	0.80	0.775	710	710,5	.....	.....	0.981	.....	.....
44,5	37 32	37 41	37 36,5	0.75	0.725	708	709	.....	.....	0.858	.....	.....
44,8	49 20	49 31	49 25,5	0.70	0.675	712	711	.....	.....	0.745	.....	.....
45,0	8 1 12	1 21	1 16,5	0.65	0.625	708	709	.....	.....	0.638	.....	.....
45,5	13 00	13 11	13 5,5	0.60								
44,12	Means.					709,556	709,833	86154,603	86154,698	1.189	86155,792	86155,887

Observations of Coincidences at Greenwich —continued.

Height above the level of the sea 181,5 feet.

A. M. November 9th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 28,969 mer. 44°.5. } = 28,973 mean cor.
{ Endᵍ. 29,000 — 46°.0. } to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. in 24 h. cor. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Mean of Disap. and Re-ap.		Disappearance.	Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
44,8	3 17 52	17 57	17 54,5	1.13	1.090	706	706,5	.....	.....	1.943	.....	.....
44,9	29 38	29 44	29 41	1.05	1.015	704	705,5	.....	.....	1.684	.....	.....
45,0	41 22	41 31	41 26,5	0.98	0.945	707	706,5	.....	.....	1.461	.....	.....
45,2	53 9	53 17	53 13	0.91	0.875	707	707,5	.....	.....	1.250	.....	.....
45,7	4 4 56	5 5	5 00,5	0.84	0.810	706	707	.....	.....	1.072	.....	.....
45,9	16 42	16 53	16 47,5	0.78	0.755	707	706,5	.....	.....	0.931	.....	.....
46,0	28 29	28 39	28 34	0.73	0,705	707	707,5	.....	.....	0.812	.....	.....
46,1	40 16	40 27	40 21,5	0.68	0.655	708	708	.....	.....	0.701	.....	.....
46,5	52 4	52 15	52 9,5	0.63	0.610	706	707	.....	.....	0.608	.....	.....
46,8	5 3 50	4 3	3 56,5	0.59								
45,69	Means.					706,444	706,889	86153,530	86153,684	1.162	86154,692	86154,846

P. M. November 9th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29,016 mer. 47°.5. } = 29,023 mean cor.
{ Endᵍ. 29,050 — 47°. } to temp. of pend.

47,7	6 25 10	25 15	25 12,5	1.13	1.090	702	702	.....	.....	1.943	.....	.....
47,8	36 52	36 57	36 54,5	1.05	1.015	702	704	.....	.....	1.684	.....	.....
47,7	48 34	48 43	48 38,5	0.98	0.950	705	704,5	.....	.....	1.476	.....	.....
47,7	7 00 19	00 27	00 23	0.92	0.885	705	704,5	.....	.....	1.281	.....	.....
47,6	12 4	12 11	12 7,5	0.85	0.820	705	705,5	.....	.....	1.099	.....	.....
47,6	23 49	23 57	23 53	0.79	0.760	705	706,5	.....	.....	0.943	.....	.....
47,7	35 34	35 45	35 39,5	0.73	0.705	706	706	.....	.....	0.812	.....	.....
47,3	47 20	47 31	47 25,5	0.68	o 650	706	707	.....	.....	0.691	.....	.....
47,0	59 6	59 19	59 12,5	0.62	0.600	708	707	.....	.....	0.589	.....	.....
47,0	8 10 54	11 5	10 59,5	0.58								
47,51	Means.					704,889	705,222	86152,990	86153,106	1.169	86154,159	86154,275

Observations of Coincidences at Greenwich—continued.

Height above the level of the sea 181,5 feet.

A. M. November 10th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 28.640 mer. 43°.5. / Endᵍ. 28.620 — 44°.5. } = 28.613 mean cor. to temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. corr. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Mean of Disap. and Re-app.		Disappearance.	Mean of Disap. and Re-app.
o	h. m. s.	m. s.	m. s.	o	o	s.	s.			vib.		
44,0	3 19 1	19 8	19 4,5	1.10	1.060	706	706	.....	.....	1.837	.....	.....
44,0	30 47	30 54	30 50,5	1.02	0.980	706	706	.....	.....	1.572	.....	.....
44,1	42 33	42 40	42 36,5	0.94	0.910	706	707	.....	.....	1.353	.....	.....
44,1	54 19	54 28	54 23,5	0.88	0.850	707	707,5	.....	.....	1.181	.....	.....
44,1	4 6 6	6 16	6 11	0.82	0.790	706	707,5	.....	.....	1.021	.....	.....
44,2	17 52	18 5	17 58,5	0.76	0.740	709	708	.....	.....	0.896	.....	.....
44,3	29 41	29 52	29 46,5	0.72	0.700	706	707,5	.....	.....	0.801	.....	.....
44,4	41 27	41 41	41 34	0.68	0.655	708	708,5	.....	.....	0.702	.....	.....
44,5	53 15	53 30	53 22,5	0.63	0.605	710	709	.....	.....	0.598	.....	.....
44,8	5 5 5	5 18	5 11,5	0.58								
44,25	Means.					707,111	707,444	86153,761	86153,876	1.107	86154,868	86154,983

P. M. November 10th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 28,617 mer. 45°. / Endᵍ. 28,613 — 45°. } = 28,597 mean cor. to temp. of pend.

45,2	6 31 10	31 16	31 13	1.16	1.120	703	703,5	.....	.....	2.051	.....	.....
45,2	42 53	43 00	42 56,5	1.08	1.050	705	705	.....	.....	1.803	.....	.....
45,2	54 38	54 45	54 41,5	1.02	0.980	705	706	.....	.....	1.572	.....	.....
45,2	7 6 23	6 32	6 27,5	0.94	0.910	706	706	.....	.....	1.353	.....	.....
45,2	18 9	18 18	18 13,5	0.88	0.850	706	706	.....	.....	1.181	.....	.....
45,2	29 55	30 4	29 59,5	0.82	0.780	705	707	.....	.....	0.996	.....	.....
45,2	41 40	41 53	41 46,5	0.74	0.710	706	706	.....	.....	0.823	.....	.....
45,2	53 26	53 39	53 32,5	0.68	0.655	707	707	.....	.....	0.702	.....	.....
45,2	8 5 13	5 26	5 19,5	0.63	0.605	706	707	.....	.....	0.598	.....	.....
45,2	16 59	7 14	17 6,5	0.58								
45,2	Means.					705,444	705,944	86153,183	86153,357	1.231	86154,414	86154,588

Observations of Coincidences at Greenwich—continued.

Height above the level of the sea 181,5 feet.

A. M. November 11th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begˢ. 29.273 mer. 42°. } = 29.280 mean cor. to
{ Endˢ. 29.300 — 43°. } temp. of pend.

Temp.	Time of Disappearance.	Time of Re-appearance.	Mean of Disappearance and Re-appearance.	Arc of vibration.	Mean Arc.	Interval in seconds of Clock.		Observed vibrations in 24 h.		Correct. for Arc.	Vibra. corr. for Arc.	
						Disap.	Disap. & Re-ap.	Disappearance.	Mean of Disap. and Re-ap.		Disappearance.	Mean of Disap. and Re-ap.
°	h. m. s.	m. s.	m. s.	°	°	s.	s.			vib.		
42,0	3 14 45	14 48	14 46,5	1.14	1.095	706	707,5	.....	.....	1.961	.....	.....
42,0	26 31	26 37	26 34	1.05	1.010	708	708	.....	.....	1.668	.....	.....
42,1	38 19	38 25	38 22	0.97	0.935	708	708,5	.....	.....	1.431	.....	.....
42,4	50 7	50 14	50 10,5	0.90	0.870	709	709,5	.....	.....	1.237	.....	.....
42,7	4 1 56	2 4	2 00	0.84	0.810	708	708,5	.....	.....	1.072	.....	.....
42,9	14 44	14 53	14 48,5	0.78	0.750	711	710,5	.....	.....	0.919	.....	.....
42,9	25 35	25 43	25 39	0.72	0.700	708	709,5	.....	.....	0.801	.....	.....
42,9	37 23	37 34	37 28,5	0.68	0.655	710	710,5	.....	.....	0.701	.....	.....
43,0	49 13	49 25	49 19	0.63	0.605	710	709,5	.....	.....	0.598	.....	.....
43,0	5 1 3	1 14	1 8,5	0.58								
42,59	Means.					708,667	709,111	86154,297	86154,450	1.154	86155,451	86155,604

P. M. November 11th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begˢ. 29.302 mer. 43°. } = 29.312 mean cor. to
{ Endˢ. 29.333 — 45°. } temp. of pend.

44,5	5 37 54	37 57	37 55,5	1.15	1.110	705	706,5	.....	.....	2.014	.....	.....
44,2	49 39	49 45	49 42	1.07	1.030	705	705,5	.....	.....	1.733	.....	.....
44,2	6 1 24	1 31	1 27,5	0.99	0.955	707	707,5	.....	.....	1.491	.....	.....
44,4	13 11	13 19	13 15	0.92	0.880	705	707	.....	.....	1.266	.....	.....
44,4	24 56	25 8	25 2	0.84	0.810	709	707,5	.....	.....	1.072	.....	.....
44,3	36 45	36 54	36 49,5	0.78	0.750	708	708	.....	.....	0.919	.....	.....
44,2	48 33	48 42	48 37,5	0.72	0.700	708	709	.....	.....	0.801	.....	.....
44,3	7 00 21	00 32	00 26,5	0.68	0 655	708	708	.....	.....	0.701	.....	.....
44,3	12 9	12 20	12 14,5	0.63	0.605	708	709	.....	.....	0.598	.....	.....
44,4	23 57	24 10	24 3,5	0.58								
44,32	Means.					707,0	707,556	86153,722	86153,914	1.177	86154,899	86155,091

Vibrations of the Pendulum at the Royal Observatory at Greenwich, November 1825.

The Clock making 86398,13 vibrations in a mean solar day at a mean rate.

Date.	Barom.	Ther.	Diff. Temp. & 50	Vibra. in 24 h. cor. for Arc by		Correction for Temp.	Vibra. of pend. in 24 h. at temp. of 50° by	
				Disappearance.	Mean of Disap. and Re-ap.		Disappearance.	Mean of Disap. and Re-ap.
	Inches.	o	o			vib.		
Nov. 7th A.M.	29.115	44.11	5.89	86156,386	86156,519	— 2.491	86153,895	86154,028
— P.M.	29.126	46.13	3.87	86155,521	86155,636	— 1.637	86153,884	86153,999
8 A.M.	29.200	41.10	8.90	86157,150	86157,263	— 3.765	86153,385	86153,498
— P.M.	29.058	44.12	5.88	86155,792	86155,887	— 2.487	86153,305	86153,400
9 A.M.	28.973	45.69	4.31	86154,692	86154,846	— 1.823	86152,869	86153,023
— P.M.	29.023	47.51	2.49	86154,159	86154,275	— 1.053	86153,106	86153,222
10 A.M.	28.613	44.25	5.75	86154,868	86154,983	— 2.432	86152,436	86152,551
— P.M.	28.597	45.20	4.80	86154,414	86154,588	— 2.030	86152,384	86152,558
11 A.M.	29.280	42.59	7.41	86155,451	86155,604	— 3.134	86152,317	86152,470
— P.M.	29.312	44.32	5.68	86154,899	86155,091	— 2.403	86152,496	86152,688
Mean.	29.297	44.50					86153,008	86153,144

Results.

From	To	Correct number of vibrations of pend. in a mean solar day.	
		Disappearances.	Mean of Disap, and Re-ap.
Nov. 7th A. M.	Nov. 8th P. M.	86152,867	86152,981
———	9th P. M.	86153,017	86153,138
———	10th P. M.	86152,978	86153,105
———	11th P. M.	86153,008	86153,144
8th A. M.	9th P. M.	86153,126	86153,246
———	10th P. M.	86153,024	86153,152
———	11th P. M.	86153,037	86153,176
9th A. M.	10th P. M.	86152,949	86153,088
———	11th P. M.	86153,001	86153,152
10th A. M.	11th P. M.	86152,958	86153,117
Mean.....		86152,996	86153,130
Correction for buoyancy.....		+ 6,041	+ 6,041
——— elevation		+ 0,450	+ 0,450
Final No. of vibra. in vacuo at the level of the sea, temp. 50°. (Fah.)		86159,487	86159,621

By this experiment, it appears that the final number of vibrations which would have been made by the pendulum at Greenwich in 24 mean solar hours at the level of the sea, in vacuo, and at the temperature of 50° of FAHRENHEIT, by the

method of disapp. of the white disk is - 86159,487
and by the mean of its disapp. and re-app. 86159,621

But from the final results deduced from the experiment made at Greenwich in April 1824, previous to leaving England, the total number of vibrations which would have been made by the same pendulum under the above circumstances, by the

method of disappearance, was - - - 86159,250
and by the mean of disapp. and re-app. - 86159,380

Having already stated, what I have considered to be the cause of the difference in the number of vibrations of the pendulum in these experiments; the following arithmetical means of the results of the series in April 1824, and November 1825, are to be considered as the proper number of vibrations of the pendulum, at Greenwich, to be compared with those obtained at Port Bowen, and are by the method of

disappearance of the white disk - 86159,368
and by the mean of its disapp. and re-app. 86159,500.